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MONETARISM AND THE FEDERAL RESERVE'S CONDUCT OF MONETARY POLICY

COMPENDIUM OF VIEWS

PREPARED FOR THE USE OF THE

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OF THE

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LETTER OF TRANSMITTAL

DECEMBER 23, 1982.

Hon. HENRY S. REUSS,
Chairman, Joint Economic Committee,
Congress of the United States,
Washington, D.C.

DEAR MR. CHAIRMAN: Transmitted herewith for use of the Members of the Subcommittee on Monetary and Fiscal Policy, the full Joint Economic Committee, the Congress and the public at large are replies received from the Federal Reserve and academic, business and research monetary economists in response to a questionnaire sent out August 5, 1982 on "Monetarism and the Federal Reserve's Conduct of Monetary Policy."

The past few years have been hard ones. We have suffered a major recession. At the same time, inflation has been checked and interest rates, which skyrocketed from 1977 to 1980, have been greatly reduced. These developments have set the stage for a vigorous recovery.

Monetary policy has had a major impact on our economic performance these past few years. No one denies that. Many of the respondents believe that bad monetary policy was the major factor responsible for the inflation and skyrocketing of interest rates in the 1977 to 1980 period that made the 1981 to 1982 recession inevitable. They also believe that the descent from inflation and sky-high interest rates could have been smoother if the slowdown of money growth that the Federal Reserve engineered in 1981 and the first half of 1982 had been smoother. The recession that was set in motion by the surges of money growth, and thus higher inflation and interest rates, in the 1976 to 1980 period was exacerbated by the exceedingly sharp decline of money growth after April 1981.

But now money growth is surging once again. Our respondents wrote before this latest acceleration began. However, with few exceptions, their responses indicate they must be concerned about it. Unless it is stopped, and quickly, we shall find the recovery that I believe is now underway turning into another inflationary-high interest rate calamity boom, which ends inevitably in another recession some time in the mid-1980's. There is no need for this to happen. Noninflationary money growth can be achieved, and should be.

The introductory analysis that follows immediately after my August 5, 1982 letter was prepared by Dr. Robert E. Weintraub, Senior Economist and typed by Juanita Morgan.

Sincerely,

ROGER W. JEPSEN,
Chairman, Subcommittee on Monetary and Fiscal Policy.

QUESTIONNAIRE LETTER

Congress of the United States,
Joint Economic Committee,
Washington, D.C., August 5, 1982.

----------: Recently, a number of commentators have suggested that monetary policy is the principal factor keeping interest rates high. It has been further suggested that this is due to the inherent weakness of the "quantity theory." It has been said that if the quantity of money is fixed, then it stands to reason that inflation and interest rates will fluctuate based on changes in the demand for money and the real output of the economy. Therefore, recent changes in the demand for money and in real output which have not been accommodated by faster money growth are responsible for high interest rates.

These commentators have argued that the Federal Reserve's policy is essentially "monetarist" and that this "monetarist" policy is therefore largely responsible for high interest rates. They further argue for a "price rule," wherein the monetary authorities target the price level (or some proxy, such as gold or a sensitive commodity index) rather than the quantity of money itself. Such a policy, it is said, would cause interest rates to decline.

I would appreciate your comments on these propositions. In particular, I would appreciate your answers to the following questions:

1. What is "monetarism"?
2. Are changes in the demand for money frequent enough, large enough, and sufficiently long lasting to vitiate the usefulness of "Monetarist" monetary policy? What about changes in real output?
3. Is it correct to say that the Federal Reserve has been following a "monetarist" policy since October 1979?
4. Did implementation of the Credit Control Act in March 1980 interrupt the "monetarist" policy announced in October 1979? If so, how and for how long?
5. If not, then what change actually occurred in October 1979, and how would you characterize Fed policy since that time?
6. How do you feel about moving towards a "price rule" for monetary policy?
7. To what extent is monetary policy, as currently conducted by the Fed, responsible for high interest rates, as opposed to fiscal policy, and what policy changes, if any, should the Fed make today in order to reduce interest rates?

I would appreciate your response to these questions in preparation for a Joint Economic Committee report on the relationship between Federal Reserve policy and high interest rates. Your cooperation is most appreciated.

Sincerely,

ROGER W. JEPSEN,
Chairman, Subcommittee on Monetary and Fiscal Policy.

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INTRODUCTION

One of the most controversial economic theories of our times is monetarism. Its hypotheses are not widely understood and often are misstated badly. And, where the hypotheses are understood and stated clearly, there is dispute about their validity. Most importantly, there is dispute about "Monetarism and the Federal Reserve's Conduct of Monetary Policy."

It is widely believed that the Federal Reserve has been "monetarist" in recent years. However, many question that assessment. And both sides ask how effective (or destructive) the Fed's brand of monetarism (or non-monetarism) has been, and whether different approaches (more or less monetarist) to ending inflation and achieving reasonable interest rates and full employment should be adopted than the ones that have been followed.

To shed light on these issues, a questionnarie was sent to eminent experts in monetary economics. Some chose not to respond. The replies of those who chose to respond are printed in full in this Compendium. The responses are divided into two groups. The first group consists of answers that were given to the specific questions that were asked. The second group of responses consists of pertinent statements that were submitted for the record either to supplement answers to the questionnaire or in lieu of them.

Highlights of respondents' views are summarized below. The summary covers respondents' views on "What Is Monetarism?," "Is the Demand for Money Stable Enough for Monetarist Policy To Be Followed?" "What Problems Do Changes in Real Output Raise?" "Monetary Policy From October 6, 1979, Until Now," "Does a Price Rule Make Sense?" "What About Targeting Nominal GNP Growth?" and "Is the Fed Responsible for High Interest Rates?" The summary is intended as an introduction. It does not capture the range and richness of respondents' views. That can be done only by reading them.

WHAT IS MONETARISM?

From the respondents we learn that monetarists believe and hypothesize the following:

1. In mixed private-public economies, including the U.S. economy, the private sector is inherently stable. It reacts constructively to exogenous disturbances that create unemployment and production shortfalls. Recessions will not persist, or grow into depressions, in the absence of destabilizing monetary and other government policies.

2. Changes in money growth are a major determinant of current dollar or nominal Gross National Product (GNP) growth. However, they are not the only determinant of nominal GNP growth. Stated in statistical terms, monetarists do *not* hypothesize that regressions that fit, for example, yearly percentage changes in nominal GNP to yearly

percentage changes in M1 will produce R^2 values equal to unity. What they hypothesize rather is that the coefficient of M1 growth in such regressions will not differ significantly from unity except in hyperinflations and that the R^2 value will be substantial—more than 0.5.

3. In the short run, changes in money growth can cause changes in constant dollar or real GNP growth. However, over time, such changes erode. In time, changes in money growth are reflected fully, percentage point for percentage point, in the inflation rate. Increases in money growth are fully dissipated in increased inflation in one or two years. It takes about the same time for inflation to taper off after money growth is decelerated.

4. *Persistent* inflation is a monetary phenomenon.

5. Nominal interest rates depend strategically on the rate of inflation. They rise and fall with increases and decreases in inflation, although with some lag.

6. It is countreproductive to try to reduce nominal interest rates and unemployment by increasing money growth. Such attempts ultimately cause higher interest rates and higher unemployment. Monetary policy can best contribute to the achievement of low or reasonable nominal interest rates and full employment by ending inflation.

7. The Federal Reserve has ample powers to control monetary growth, for example, M1 growth. It should use these powers to achieve long-run price level stability. Specifically, in order to end inflation, the Federal Reserve should reduce M1 growth to a rate no higher than our economy's long-run potential to increase real GNP (3 to 3½ percent a year) minus the trend rate of rise of M1 velocity. Since the Korean War, the trend rate of rise of M1 velocity has been 3 to 3½ percent a year. Thus, zero M1 growth should now be the goal. After reducing M1 growth to this rate, the Federal Reserve should keep it there unless either the *trend* rate of rise of M1 velocity or the economy's long-run potential to increase real GNP change. Finally, it should not be concluded that either of these factors have changed without several years of affirming observations.

IS THE DEMAND FOR MONEY STABLE ENOUGH FOR MONETARIST POLICY TO BE FOLLOWED?

Monetarists do not argue that the demand for money, M1, never changes. If that were true, they would expect regressions of yearly changes in nominal GNP growth on yearly changes in M1 growth to fit perfectly. As discussed in number 2 above, they don't expect that at all.

Changes in the demand for money occur. and when they do they change nominal GNP growth by changing the rate of rise of M1 velocity. The question is whether changes in the rate of rise of velocity are frequent enough, large enough, and last long enough, or are sufficiently positively autocorrelated, to vitiate the usefulness of the monetarist policy prescription described in numbers 6 and 7 above.

Respondents differed in their discussion of this question. However, by a three to one margin, respondents argued that although changes in money demand and the rate of rise of M1 velocity occur, they are not frequent enough, large enough, or sufficiently enduring or positively autocorrelated to vitiate the usefulness of the monetarist policy prescription.

Excerpts from some of the diverse responses to this question are set forth below.

Chairman Volcker for himself and all except one of his Federal Reserve colleagues: "* * * research done by economists inside and outside the Federal Reserve System on the whole appears to confirm the common impression that in the past decade, which has been marked by major changes in financial institutions and cash management practices, there have been appreciable shifts from time to time in the public's demand for money * * *."

Federal Reserve dissenter: "There is, in fact, evidence that the demand for money function has *not* been subjected to large, frequent nor unforseen shifts during the past few years." Moreover, "Instability in the money demand relationship, to the extent that it exists, is, in large part, the outcome of a reaction to high rates of inflation * * *."

George G. Kaufman: "With the possible exception of the 1974 to 1975 period, there is no empirical evidence that even the major innovations in the financial sector that have occurred in recent years have shifted the demand for money sufficiently to seriously hamper monetary control of the economy. These conclusions have been reached on the basis of thorough empirical investigations, both inside and outside the Federal Reserve System."

Richard F. Muth: "The demand for money is one of the most stable economic relationships."

Milton Friedman: "Changes in the demand for money are not frequent enough, are not large enough, and are not sufficiently long lasting to vitiate the usefulness of 'monetarist' monetary policy. On the contrary, the talk about changes in the demand for money is simply a red herring introduced by the Federal Reserve to cover up mistakes in its policy."

Allan H. Meltzer: "Usually, allegations about changes in the demand for money are a device to cover up its errors. To date, no one has produced evidence of large persistent changes in the demand for money."

Mark H. Willes: "Jim Duprey in 'The Search for a Stable Money Demand Equation' (*Quarterly Review*, Federal Reserve Bank of Minneapolis; Summer 1980) conducted an extensive survey of published work and cound find *no* money demand equation (M1 or M2) which passed statistical tests for structural stability." However, the focus of the tests was the short run. Hence, "The evidence that the demand for money in the United States is not stable does not mean that monetarism is a mistake. The short-run shifts in money demand likely cancel out to a great degree because researchers do tend to find stable long-run relationships between money and price or income."

David Laidler: "* * * there is considerable short-run variability in measured demand for money functions. * * * much of this instability, I believe, is produced by the econometric techniques which we use in attempts to estimate demand for money functions. We almost always use the *supply* of money to measure the *demand* for it. That is alright so long as it is safe to assume that the supply and demand for money are equal, but I believe that this is an invalid assumption (certainly) over short periods * * *."

Allan H. Meltzer: "The most that has been shown is that the particular econometric constructions purporting to describe the demand for money in a particular period have not worked in other periods. These demonstrations have nothing to do with the central propositions of monetarism or the correctness of a monetarist policy."

Jerry L. Jordan: "Sharp accelerations and decelerations of money growth are not accompanied by a simultaneous sharp acceleration or deceleration of GNP growth; therefore, in any single quarter the ratio of GNP to money (velocity) fluctuates inversely with fluctuations in that quarter's money growth. But this reflects nothing more than the fact that there are lags in the relationship between money growth and economic activity." Furthermore, "intensive studies * * * have revealed that after a period of two to four quarters, such apparent 'shifts in the demand for money' have been reversed or 'averaged out.' "

Respondents *Reynolds* and *Taylor* argued to the contrary that changes in money demand have perverse effects but these effects can be avoided.

Alan Reynolds: "Changes in the public's willingness to hold various types of money have large and abrupt effects. * * *"

John B. Taylor: "Shifts in money demand do occur frequently. Some of the shifts are large, and some last a long time. In my view, it is possible for the monetary authorities to discover shifts in money demand and to react to them with a relatively short lag. Such shifts should be accommodated by changing the supply of money."

Respondents *Mayer*, *Sinche*, *Barth*, and *Hess* argued that trying to avoid any such perverse effects could make matters worse.

Thomas Mayer: "* * * suppose that the relation between money and income has actually become less stable. Does this mean that it is too unstable to serve as the basis for policy? Since the Fed must do something, the question is not so much whether the money-income relationship is stable or not, but whether it is less stable than the relation between interest rates and income. * * * even suppose that the interest-income relation were stabler * * * the money stock might still be a better target for Fed policy than the interest rate. This becomes plausible if one drops the assumption, underlying most discussions of monetary policy, that the Fed is extremely efficient."

Robert M. Sinche: "A natural question arises as to whether the growth in the money stock should be altered to reflect changes in the demand for money emanating from stages of the business cycle or other external factors. That question first presumes that the monetary authorities can, *in advance*, anticipate these changes in money demand and adjust policy appropriately. History suggests that the task is extraordinarily difficult and, despite all good intentions and professional expertise, in all likelihood cannot be performed adequately."

James Barth: "Specifically, it is reasonable to view velocity as growing at an historically determined trend rate (the anticipated component), with random deviations about that trend (the unanticipated component). Based upon this view, the monetary authorities cannot consciously manipulate the money supply so as to offset all movements in velocity, because some of the movements are random and thus cannot be anticipated. But by persisting in the attempt to do so, the monetary authorities can make matters worse."

Alan C. Hess: "Velocity is essentially a random walk. * * * given that velocity is a random walk, there is little or nothing that policy can do to anticipate future movements in money demand or to offset past movements in it without unpredictable future consequences. What then should policy do? Be stable so as to not increase the variation in aggregate demand."

WHAT PROBLEMS DO CHANGES IN REAL OUTPUT RAISE?

Unexpected changes in real GNP raise obvious problems for the monetary authorities. Not all respondents addressed this issue. Some of the views of those that did are given below.

Chairman Volcker for himself and all his Federal Reserve colleagues: "When the demand for money changes because of changes in real output, adherence to a given monetary target path would tend to result in cyclical variations in interest rates that help to stabilize growth in economic activity. * * * An adjustment of monetary targets might be desirable, however, when there are unanticipated 'supply shocks' to the economy such as an OPEC oil embargo * * *."

William G. Dewald: "With respect to variations in potential real output growth, if, as in the 1970's because of demographic factors, oil cartels, and the like, real growth fell from about 4 percent to about 3 percent, anti-inflationary monetary growth would appropriately be reduced by 1 percentage point. But, even if it were not, the observed variation in real output growth has been small relative to variation in demand growth and thus has not contributed much to inflation * * *."

David Laidler: "So long as there is a stable demand for money function over the medium term, one would expect changes in the supply of money to cause changes in prices, output, and interest rates. We can be reasonably confident I believe that over periods like four or five years, the bulk of the relevant changes will come out in the price level. However, over shorter periods, the possibility of interest rate and output changes makes it almost impossible to predict the immediate impact of monetary policy on the price level. This, to me, is another reason in favor of setting medium-term targets for monetary growth and not worrying too much about trying to fine tune prices or real output with monetary growth."

MONETARY POLICY FROM OCTOBER 6, 1979, UNTIL NOW

By a very large majority, respondents expressed the view that the Federal Reserve's conduct of monetary policy in the period from October 6, 1979 until now is not strictly monetarist nor even mainly monetarist. Looking at the record of monetary growth from then until now, Milton Friedman said, "If this be monetarism, I am not a monetarist."

Part of the failure to control monetary growth in this period and achieve a steady gradual decline was attributed by a number of respondents to credit controls. Credit controls were imposed in March 1980 and removed in July 1980 and their effects lasted well past that date. Many respondents recognized, as Federal Reserve Board Vice Chairman Preston Martin put it in testimony before a House Banking

Committee Subcommittee on July 15, 1982, that credit controls "appeared to add to the volatility in financial markets and the economy in 1980 and, in some ways, by distorting underlying economic and financial conditions, made sound fiscal and monetary policies more difficult to formulate." For the record, during the second quarter when credit controls were in force, M1 actually declined at a 3.1 percent annual rate. In the third quarter, following the removal of credit controls, yearly M1 growth accelerated to 14.6 percent. In the fourth quarter, it was 11.2 percent. It is difficult to believe that the Federal Reserve was trying to keep M1 growth on some reasonably smooth declining or disinflationary track during these quarters. It also should be noted that interest rates were virtually unchanged between March 1980 when credit controls were imposed and December 1980 after adjustment to their removal. The 3-month Treasury bill rate averaged 15.6 percent in March 1980 and 15.7 percent in December 1980. The 10-year Treasury bond yield averaged 12.75 percent in March and 12.84 percent in December.

Excerpts from respondents' discussions of the conduct of monetary policy from October 1979 to now, and the effects of credit controls on monetary policy, are given below.

Has monetary policy been "monetarist" since October 6, 1979? Respondents *Fischer* and *Latane* said yes, in varying degree however.

Stanley Fischer: "More so than ever before, and more than is desirable."

Henry A. Latané: "The Federal Reserve has been following a 'monetarist' policy since October 1979. * * * Since October 1979, interest rates have been even more a 'loose cannon.' "

Chairman Volcker, responding for himself and all his Federal Reserve colleagues, expressed a different view of what the October 1979 change involved.

Chairman Volcker: "The change in October 1979 involved the means of implementing monetary policy; greater reliance was placed on control of the reserve base as the means of achieving desired monetary growth." However, flexibility "to look at all the available information and to alter the monetary growth objectives in the light of current judgements" was retained. Such flexibility is deemed "fundamental to the practical monetary-oriented targeting approach pursued by the (Federal Reserve) System."

However, "the practical monetary-oriented targeting approach," as Chairman Volcker labelled it, was subordinated to the demands and effects of credit controls in the second, third and fourth quarters of 1980. Chairman Volcker put it this way, "The marked contraction in borrowing after the program (credit controls) was instituted, and the resurgence in borrowing as it unwound, led to sizable fluctuations in money balances and interest rates—first downward then upward * * *. Certainly the use of explicit credit restraints was not, in itself, monetarist. * * * the monetary aggregates were, in fact, thrown off course for a period."

A similar view was expressed by *McCracken.*

Paul W. McCracken: Has monetary policy been monetarist since October 1979? "My short answer would be in the affirmative. At the same time, it would not be fair to say that the Federal Reserve excludes all other considerations from their policy decisions."

What about credit controls? Did they interrupt the "monetarist" policy? "Yes—and the implementation of that unfortunate act also produced an enormous displacement effect in the economy. Unquestionably, it was the major cause of that recessionette in 1980."

Other respondents expressed the view that, although on average the trend of money growth from October 1979 to the summer of 1982 had been monetarist, the Fed had not adopted truly monetarist control procedures. By and large, these respondents also were critical of credit controls.

Robert D. Auerbach: "The Federal Reserve policy since October 1979 has generally been successful in moving money growth toward lower average levels. The record is marred by long episodes of monetary growth in different directions away from that general trend."

David I. Fand: "The Fed has been following a monetarist policy in the sense that it is placing far more emphasis on money growth and the monetary aggregates than on interest rates. In this sense, my answer is yes."

On the other hand, "the Fed has introduced and permitted very considerable short-run fluctuations in money growth. Thus, while the Fed emphasizes the monetary aggregates, it has not yet succeeded in stabilizing the short-run growth rates of these aggregates."

On credit controls: "The implementation of the Credit Control Act in 1980 did interrupt the monetary policy in two ways. First, when it was initially imposed, we had a very sharp and severe cutback in credit, and for about three months we had a dramatic, sharp and severe curtailment in credit. Then, to offset the deflationary consequences of this severe curtailment in credit, the Federal Reserve permitted a very large and dramatic acceleration in monetary growth. * * * All in all, the interruption in monetarist policy—both the initial sharp curtailment in credit and the subsequent large increase—lasted about 9 months."

Mark H. Willes: "The Federal Reserve made two changes to monetary policy in October 1979, it increased its commitment to the goal of price stability through control of money and it altered its method for controlling money. The first change was a movement in the direction of monetarism, but the second was not.

"The Federal Reserve announced a policy of gradual deceleration in the growth of money. On the whole, it has followed through on that policy." However, as indicated above, Willes was critical of the new method for controlling money. As he put it, "the Fed turned to using nonborrowed reserves. Formerly, the Fed had fixed the Federal funds rate to hit the point on the money demand function consistent with its monetary targets. The Fed felt that a nonborrowed reserve instrument would give it better and more direct control of the stock of money, while possibly sacrificing some in interest rate stability." The new procedure did not work as hoped. Willes continued, "The experience since October 1979 is that there has been more volatility in both interest rates and money growth than previously. * * * Perhaps, it should attempt to control the supply of money by fixing total reserves or the monetary base and, thus, let interest rates be determined by the demand for money. The point is, this (monetarist) procedure has not been tried."

With respect to credit controls, Willes stated, "Implementation of credit controls disrupted the economy and altered asset demands * * *. The disruptions which were caused generally seemed to be of short duration * * *."

Robert M. Sinche: "I believe it would be correct to say that the Federal Reserve has, in general, followed a more monetarist policy since October 1979. Obviously, there are different degrees of success in maintaining stable monetary growth. The volatility of monetary growth has been excessive, particularly during the first 18 months of the new policy. * * * Part of the reason for monetary volatility during the first six quarters of the new monetary policy approach was the ill-advised implementation of the Credit Control Act in March 1980."

Jerry L. Jordan: "* * * it would not be correct to say that the Federal Reserve has successfully pursued a 'monetarist' policy since October 1979. Federal Reserve officials have stated a long-run objective of slowing the growth of monetary aggregates in order to reduce inflation, which is consistent with a monetarist prescription. However, short-run volatility of money growth has actually increased since October 1979, which is contrary to a monetarist policy. * * * a steadier and more predictable rate of monetary growth would have produced lower market interest rates, which is one of the objectives of a successful anti-inflationary monetary policy.

"* * * the implementation and subsequent removal of credit controls in 1980 caused changes in the actual implementation of monetary policy. Market interest rates came under sharp downward pressure soon after the controls were imposed. Real economic activity, and, therefore, effective credit demands collapsed as a result of the controls. The Federal Reserve was not willing to see market interest rates drop as drastically as market forces seemed to imply during the first few weeks of the controls, so they provided fewer (drained more) reserves from the banking system in order to moderate the rate of decline of interest rates. In addition, the public appears to have decided to hold a larger share of their money balances in the form of currency as a result of the limitations imposed on the use of credit cards. These developments resulted in an absolute contraction of the money supply at a time when real economic activity was declining. When the controls were suddenly removed, credit demands immediately increased as economic activity revived. The resulting upward pressure on interest rates was viewed as undesirable because of the recession and rising unemployment. Central bank actions in the summer and autumn of 1980 resulted in extremely rapid growth of bank reserves and the money supply as interest rates rose to the highest levels in modern history. Such developments were clearly contrary to a monetarist policy."

Michael Parkin: "I have characterized the policy change that occurred on October 6, 1979 as one of placing less emphasis on the Federal Fund's rate and more emphasis on the growth rate of the money stock. I would not, however, characterize it as a dramatic abandonment of the old policies and adoption of monetarism."

James Barth: "* * * monetarism is based on the view that the Federal Reserve should pursue a policy that leads to a moderate and steady (and thus predictable) rate of money growth. * * * the record for money growth rates since October 1979 clearly indicates that the Federal Reserve has slowed money growth, but has not done so in a steady fashion. It is therefore totally unfair to say that the Federal Reserve has been following a policy fully in accord with monetarism since October 1979.

"* * * the imposition and elimination of credit controls explains the wide swings in money growth rates during the second and third quarters of 1980. The controls cannot, however, explain the substantial unsteady growth rates in money during the entire post-October 6, 1980 period."

Many respondents focussed on the Fed's failure to adopt monetarist control procedures.

Milton Friedman: "The change that actually occurred in October 1979 was that the Federal Reserve changed the details of its operating procedures. Its objective of seeking to control total reserves rather than interest rates was an excellent one but the actual changes it made were inadequate to achieve its objective. The chief mistake it made was not to introduce contemporaneous reserve requirements simultaneously with the other changes in policy. It made the further mistake linked to this one of not introducing a discount rate linked to a market rate." As a result, "* * * actual performance has not been monetarist. An absolutely essential feature of the monetarist policy is steadiness in the rate of monetary growth. Since October 1979, monetary growth has been more unstable than in any other comparable period that I know about in the whole history of the Federal Reserve System. If this be monetarism, I am not a monetarist."

Robert J. Genetski: "Fed policy since October 1979 has been more volatile than before. As a result I would argue that monetary policy since that time has become anti-monetarist and clearly more oriented toward some other school of thought."

Anna J. Schwartz: "* * * the Fed announced that it would use nonborrowed reserves as the instrument to achieve control of monetary growth. In operation, the Fed's procedures have increased both the variability of monetary growth rates and of interest rates. The financial markets have reacted to the wide swings in monetary growth by incorporating large risk premia in interest rates at all maturities."

Mrs. Schwartz concluded that, "Monetary control was not effectively exercised by the Federal Reserve in the months preceding the implementation, during the implementation and since the rescinding of the implementation of the Credit Control Act. Is there better proof than that the annual growth rate of money from November 1979 through May 1980 was 1.1 percent; from May 1980 through April 1981 was 12.5 percent; from April 1981 through October 1981 was −0.2 percent, and up and down again since that date? The result has been two back-to-back recessions in 1980 and 1981 to 1982."

John Makin: "Since October of 1979, the Fed's stated policy has been to target non-borrowed reserves while tolerating a broader range for the Federal Fund's rate. * * * this procedure, in conjunction with lagged reserve accounting and the absence of a penalty discount rate, has contributed considerably to the enhanced volatility of money growth. * * * The Federal Reserve's new operating procedures are responsible for much of the volatility of money growth rates. * * * The Fed has not gone far enough fully to implement monetarists' prescriptions to stabilize money growth. The resulting high level of volatility of money growth rates, with many attendant 'surprises' in the path of the money supply have * * * contributed to enhanced volatility of interest rates."

On credit controls, "There is considerable evidence to suggest that imposition of the Credit Control Act in March 1980 resulted in a very sharp drop below target of money growth rates during the second quarter of 1980. The subsequent lifting of the credit controls during June of 1980 resulted in a sharp acceleration of money growth above targeted rates during the third quarter of 1980."

Arthur E. Gondolfi: "The major difference between the pre- and post-October 1979 operating procedures comes down to a more serious attempt to hit their targets and a greater willingness to adjust the funds rate as necessary. Given the existence of lagged reserve accounting, this is about the only way they could operate. Since the current procedure still leads to substantial volatility in money growth, even over periods as long as a year, this policy is not what monetarists have recommended.

"* * * Credit controls, by causing tremendous shifts in the demand and supply of bank credit, caused the Fed to be overly restrictive in the spring of 1980 and too expansionist in the second half of that year. The volatility in money growth caused by credit controls lasted into 1981."

Martin Bronfenbrenner: On credit controls, "I do not believe the act remained in effect long enough to make much difference." On policy since October 1979, "I should regard Fed policy since October 1979 as predominantly but unskillfully monetarist, with constant foot-dragging by anti-monetarists and constant possibility of reversal."

Allan H. Meltzer: "No. The Federal Reserve has not followed a monetarist policy since October 1979. The Federal Reserve policy is often inconsistent, but during most of this period, the Federal Reserve has attempted to control the level of free reserves."

George G. Kaufman: "The October 1979 change appears to have been a well-intentioned change to place greater emphasis on monetary aggregates in order to send a strong signal to the market that the Fed was finally taking a stronger stance against inflation. Previous Fed anti-inflationary pronouncements were not followed by supporting actions, and the Fed's credibility had worn thin. The difficulties of gaining greater control over the money supply under a regime of lagged reserve accounting were apparently not fully appreciated at the time, and efficient procedures for controlling money in such an environment have never been adopted. The procedures currently used are inefficient and make it very difficult to achieve the announced monetary targets. As a result, the October 1979 change has resulted primarily in increased confusion among the public, the government, and even the Federal Reserve, but little actual change in monetarist conduct."

Thomas Mayer: "If the Fed were really concerned about controlling the money growth rate, it would have responded to the large fluctuations in money growth that we have experienced by adopting some of the reforms advocated by monetarists, such as a floating discount rate or contemporaneous reserve accounting. It would have tried such reforms at least as an experiment, even if this imposed costs on banks.

"* * * moreover, the Fed frequently explains variations in the money growth rate by pointing to some factor that increased the *demand* for money. Since the stock of money is limited by the reserve base, an increase in the demand for money cannot increase the money stock unless the Fed accommodates, or at least permits this. As long as the Fed refuses to take responsibility for the money growth that actually occurs, one might well doubt its professions of monetarism."

Slowing money growth, which, as shown above, respondents agreed was the aim of policy after October 1979 and had, on average, been achieved in 1981 and the first half of 1982, has implications for the unemployment-inflation trade-off. Some respondents discussed these implications.

Stanley Fischer: Although credit controls "interrupted the constant growth rate of money policy for awhile by causing a very steep recession that worried the Fed into increasing the growth rate of M1 for a few months," by and large, "the Fed has pursued for several years a policy that is designed to reduce the inflation rate, and that pays very little regard to unemployment."

Gottfried Harberler: "* * * an ongoing inflation cannot be brought down without a reduction in monetary growth. It stands to reason, however, that with inflationary expectations entrenched as they are after 15 years of continuous high inflation, and money wages and many prices as rigid as they are, disinflation through monetary restraints will cause transitional unemployment. In other words, a recession is the unavoidable byproduct of disinflation. Squeezing out inflation from the economy is like curing a drug addict: withdrawal of dope is a painful experience.

"* * * the policy of the Fed since October 1979 can be described as consistently monetarist in a pragmatic, not an overly rigid sense—to wit, to slowly reduce the rate of monetary growth in order to slowly squeeze inflation from the economy. In my opinion, this was the right thing to do and has been on the whole successful. To repeat, a recession was the unavoidable side effect of the process of disinflation."

On credit controls, "the implementation of the Credit Control Act in March 1980 was a highly disturbing factor. The credit controls that were imposed were a dismal failure. Detailed credit controls, as compared with control of money supply, are a messy, inefficient, distorting policy—a bureaucratic nightmare which had to be abandoned after a short while."

John B. Taylor: "The *stated* change in October 1979 was in the operating procedures of the Fed. Rather than controlling money growth by manipulating the Federal funds rate, the Fed stated that it would control money growth by manipulating reserves directly. Because, both before and after the change, the Fed has stated that it wanted to control *money growth*, I do not think it is accurate to say that the Fed switched to a monetarist policy. Moreover, as many monetarists have pointed out, the short-run growth rates of money have become more volatile since October 1979 which is contrary to a switch to a monetarist policy.

"The *actual* change that occurred near October 1979 was that the Fed began, much more seriously than in earlier years, to reduce the rate of growth of *nominal GNP* in order to reduce the rate of inflation—that is, to disinflate the economy. The change in operating procedures probably made this job easier politically, for at least awhile, by reducing political pressures on the Fed to lower interest rates. A reduction in the growth rate of nominal GNP would be expected to raise interest rates, as in fact it did. The overall effort of the Fed to reduce nominal GNP growth has been successful. And, as expected, this has reduced inflation, and as a by-product caused high interest rates and a recession."

Raymond E. Lombra: On credit controls: "I believe the credit controls program was a major error. Its implementation and subsequent removal generated gyrations in the economy and the monetary aggregates which were neither anticipated nor well handled. More specifically, the reacceleration of monetary growth in the last half of 1980, which was clearly excessive, helped to sow the seeds of the most recent downturn in economic activity."

With respect to policy in 1982, "Fed policy thus far in 1982 (August 26) has been constructive. By this I mean that the rate of monetary growth is sufficient for a moderate, sustainable recovery which does not rekindle inflation."

DOES A PRICE RULE MAKE SENSE?

As discussed earlier, critics of monetarism allege that its policy prescription won't work because of large, frequent, long lasting or positively autocorrelated changes in money demand and the rate of rise of velocity. Most of these critics argue that, therefore, the Federal Reserve authorities must have full power to conduct open market and other monetary operations as they see fit from day to day; that they cannot be bound or constrained to hit a money growth target or by any other rule. But others argue that changes in money demand and other economy-wide shocks would be offset automatically if the Federal Reserve adhered to a price rule; for example, acted to prevent changes outside certain predetermined limits in the price of gold or some price index, or an interest rate, or an interest rate adjusted for inflation. Few of the respondents agreed with this idea, although many stated that the most appropriate long-run goal of monetary policy is price level stability—i.e., zero inflation. Often it was also stated that zero inflation could best be achieved by keeping money growth equal to our potential to increase output minus the trend rate of rise in velocity. Excerpts of respondents' views on these matters are given below.

Chairman Volcker for himself and all of his Federal Reserve colleagues: "I interpret 'price rule' to involve the price of goods and services, rather than an interest rate or exchange rate. I think there is a good deal to be said in principle for placing a focus on the general level of prices over time as an ultimate guide for monetary policy. Economists of many theoretical persuasions would agree that, over the long run, the greatest impact of money is on the price level. The difficulty I see, as a practical matter, is that this relationship may be a long-term one, and that therefore current price movements—whether of broad price indexes, of limited 'baskets' of commodities, or even of single commodities like gold—may not be uniquely useful as guides for policy in the short run. * * * the realities of the structure of the economy would make a rigid short-run price rule a potentially counterproductive approach—one that might result in greater monetary and economic instability."

Arthur E. Gondolfi: "Targeting the overall price level could work. The only problem is that the lag between money and prices is so uncertain and variable that it would produce violent movements in money and real activity if the Fed were intent on hitting their target in the short run. If the price rule was stipulated as a long-run target, the Fed would need some formula for gradually adjusting money to the performance of inflation. Such a gradualist policy could, if properly administered, restore confidence in monetary policy without producing needless volatility in the economy."

Milton Friedman: "A price rule for monetary policy is a bad rule although a good objective. It is a bad rule because changes in the quantity of money tend to affect prices after a considerable delay. The historical record suggests that it is roughly two years before an increase in the rate of monetary growth is fully manifested in prices. As a result, a price rule for monetary policy would produce a monetary policy that was always fighting the last war."

Richard F. Muth: "In my judgement, we don't know enough about the dynamics of the U.S. macro economy's behavior to attempt to follow any so-called price rule. The best policy, I believe, would be one of a constant growth rate of the monetary base, which is certainly within the limits of our current knowledge."

John Makin: "Holding money growth approximately equal to the rate of growth of real output with allowances for any trend in velocity constitutes a 'price rule' for monetary policy. I do believe that such a rule is the most appropriate one for monetary policy."

Robert E. Auerbach: "* * * the ultimate targets include long-run price stability, but as an operating tool for daily monetary policy, it would be a disaster. We simply do not know enough about the linkages between daily monetary operations and the price level to use the price level as the proximate *operating target.*"

Michael Parkin: "The problem with adopting a price rule if it is a broad price rule such as that of stabilizing the consumer price index is that the lags in the operation of policy are simply too long for that to be feasible. Changes in policy can only be implemented when the need for a change is observed. By the time the policy has an effect, the need will have passed. If the price rule in question is one of pegging the price of some commodity such as gold then I see no way of making that rule stick unless it is supplemented by a rule for the creation of paper money. The Bretton Woods system had a price rule—$35 a fine ounce—it did not have a rule for the creation of money. The system collapsed."

Alan Reynolds: "Nobody can know in advance what rate of growth of what kind of money will be consistent with price stability. Nor is it feasible to predict the appropriate interest rate for stable prices. The only way of knowing at the time whether money is too tight or too loose (relative to velocity and real growth) is by monitoring some commodity prices that are sensitive to monetary disturbances and relatively insensitive to supply shocks.

"A monetary standard goes even further than such a discretionary 'price rule' by defining the unit of account—a dollar—in terms of such a commodity. This provides a superior guarantee, facilitating long-term contracts at low interest rates. A price rule alone, however, would be a much more direct way of attaining price stability than attempting to predict money multipliers, velocity and real output."

David Laidler: "I would argue that medium-term monetary growth targets are the best feasible way we have of achieving price level targets at the moment. If we had more knowledge * * * then perhaps we might be able to do better by attempting to fine tune the price level. However, I do not believe that that is a practical proposition at the moment."

William G. Dewald: "An appropriate price rule would have the Federal Reserve use its instruments to hold monetary growth quarterly or semiannually to a growth path that, based on the predicted relation to inflation, would stabilize inflation in the long run. * * * Inappropriate price rules include having the Federal Reserve use its instruments to control—

> Interest rates, since so doing would generally have it alternately contribute to inflation or deflation and thereby to the amplitude of business disturbances.
>
> The price of particular commodities such as gold, since by so doing disturbances with respect to the supply or demand for that commodity would be amplified in U.S. monetary growth and in turn in the real economy, inflation, and interest rates."

Robert M. Sinche: "While the Federal Reserve's implementation of a 'monetarist' approach has been successful in reducing both inflation and interest rates over a reasonable time horizon, during some of the more difficult periods of this transition process analysts have proposed alternate monetary policy rules. One such alternative was a 'price rule' for monetary policy, a procedure under which the Federal Reserve would attempt to stabilize the value of gold or a sensitive commodity price index. Under such a procedure the Federal Reserve would add (reduce) bank reserves if the price of the chosen price index was declining (rising).

"Unfortunately. there appear to be significant problems with the implementation of such a policy. The major problem involves the choice of an appropriate basket of commodities. If the market basket chosen includes too narrow a list of commodities, it would leave policy changes potentially subject to specific shocks in the supply or demand situation of a particular commodity. On the other hand, the choice of a wider basket of commodities opens up the risk of serious time delays between Federal Reserve actions and the price response of the market basket. * * * the time delay between Federal Reserve actions and measured market reactions could send misleading signals to the monetary authorities for an extended period of time.

"In addition, it is not clear that the appropriately chosen market basket would remain constant over time. Periodic review of the market basket to account for changes in tastes, technological change, etc., would become necessary. In short, the price rule alternative appears to create additional complexities in the monetary policy arena without demonstrable improvements in results."

John B. Taylor: "Frequent changes in relative supplies and demands for commodities can cause a price index to move erratically. A policy such as a 'price rule' which is actively trying to *counteract* these temporary movements would be likely to increase economic instability. * * * if the Fed had attempted to stabilize a price index starting in October 1979—say, to keep the CPI at 230—then there would have been a much larger increase in interest rates and a much larger recession than we had."

Gottfried Haberler: "The proposal that a 'price rule' should be substituted for the quantity of money rule, in other words that the Fed should 'target the price level' and not monetary growth, rests on a complete misunderstanding of monetary policy. The central bank directly controls central bank money (the monetary base) and through it indirectly determines the growth of broad monetary aggregates. But it cannot 'target the price level.' Price level stability is the goal of monetary policy, but it is not a magnitude that can be targeted in the sense in which a monetary aggregate can be targeted.

"Your letter asks whether there exists a 'proxy for the price level such as gold' whose price could be fixed. The answer is emphatically 'no.' Under the gold standard, the price of gold in terms of dollars would be 'stable' (fixed). Some would argue that if the gold standard could be restored by international agreement, the world price level would become tolerably stable. But this is questionable and irrelevant, because it is out of the question to reach an international agreement on the restoration of the gold standard. No country, with the possible exception of South Africa or Russia (the two largest gold producers), would join the United States. Obviously, the United States cannot go it alone. It is simply amateurish to believe that it is possible to substitute a 'price rule,' in the form of a 'gold rule' or in any other form, for the quantity of money rule as the basic principle of monetary policy."

David I. Fand: "The idea of a 'price rule' for monetary policy has great intuitive appeal, but I have serious reservations about its feasibility. To follow a 'price rule,' we would need an index, and the monetary authority would restrict money when the index rose and expand money when the index fell. The monetary authority would need a reliable price index which was accurate, comprehensive, representative, and readily available, and which gave a true picture of what was happening to prices throughout the economy. I am not sure there is any index that we now can construct that can satisfy all these properties. The more comprehensive the index, the more accurate the index, the longer the time before it is available.

"If we use price indexes that are readily available, they are not truly representative of or indicative of what may be going on throughout the economy. Accordingly, while the idea of following a 'price rule' and permitting changes in money to follow an index has appeal, I do not know of any index of a commodity, or group of commodities, that would give us this information.

"There is a second difficulty in basing monetary policy on a 'price rule.' Because of the long and variable lags in monetary policy, an attempt to stabilize prices may very well lead to greater instability. The attempt by the monetary authority to counteract these disturbances may, given the long and variable lags in monetary actions, produce even greater disturbances than it was trying to correct."

Thomas Mayer: "For its strategy, the Fed should choose a price goal, but as tactics to attain this goal it should focus on the money growth rate. The particular money growth rate selected to attain the long-run price target can then be changed from time to time."

Mark H. Willes: "Price rules for monetary policy, such as commodity standards, limit by institutional arrangement the capability of monetizing government debt. This is desirable if the Federal Reserve cannot be trusted to limit the stock of Fed money in the future. Commodity standards may introduce other problems, however; if the commodity bundle is too narrow, its demand or supply may have little relation to demand or supply conditions in the whole economy. In this case stabilizing its price may not be stabilizing for aggregate prices. On the other hand, if the commodity bundle is too broad, it may not be possible to stabilize the bundle's price any better than the Fed can now stabilize aggregate prices."

David G. Rayboy: "One of the major problems with monetary management has been that such management has been subject to the discretion of the Fed. Thus, certain turns in monetary policy could be traced to political pressures. This 'discretion' problem would be much in evidence under a price rule.

"* * * the price of gold, or any commodity, could change due to exogenous factors. The proponents of a price rule argue that such exogenous forces could be ignored by the Fed. Once this discretion is reintroduced, we are back to square one. Given various political pressures, market signals could be discounted.

"As a practical matter, the 'price' observed by authorities would have to be a forward price rather than a spot price. Current price changes are a lagged response to past monetary activities. If, on the other hand, forward prices are increasing, it would be a signal that the market expects increased inflation. Simultaneously, the entire yield structure for interest rates would shift upward due to increased inflation premiums. Thus, gearing monetary policy to interest rates or forward prices would be equivalent.

"Either one of these procedures is unnecessary. Empirical evidence strongly suggests that when monetary growth is stable, so are both interest rates and forward prices. Given this relationship, it should be obvious that the easiest way to achieve price stability is to utilize a money rule. Absent unpredictable intervention by the Federal Government, there is no logical reason to expect wide swings in money demand."

WHAT ABOUT TARGETING NOMINAL GNP GROWTH?

Several respondents also commented on the wisdom of targeting nominal GNP growth. Pertinent excerpts are given below.

Alan Reynolds: "The same rate of growth of nominal GNP can be inflationary or not depending on real growth. * * * nominal GNP is therefore an inappropriate objective."

John B. Taylor (reprise): "The *actual* change that occurred near October 1979 was that the Fed began, much more seriously than in earlier years, to reduce the rate of growth of *nominal GNP* in order to reduce the rate of inflation—that is, to disinflate the economy. The change in operating procedures probably made this job easier politically, for at least awhile, by reducing political pressures on the Fed to lower interest rates. A reduction in the growth rate of nominal GNP would be expected to raise interest rates, as in fact it did. The overall effort of the Fed to reduce nominal GNP growth has been successful.

And, as expected, this has reduced inflation, and as a by-product caused high interest rates and a recession."

Thomas Mayer: "An alternative to a price target would be a nominal income target. Since in framing such a target one obviously has to decide on what inflation rate to tolerate, in principle there is not conflict between the two. But suppose the estimates used to make up the nominal income target contain errors; then the two may be inconsistent. For example, nominal income might grow at the desired 8 percent rate, but the inflation rate might be 7 percent instead of the expected 5 percent. With a nominal income target if real income grows at a slower rate than expected, then prices are allowed to grow at a faster rate. This might be defended on the argument that this error would reflect that policymakers underestimated the unemployment cost of bringing the inflation rate down, and that this justifies adopting a more gradual approach to eliminating inflation. In this respect, a nominal income target is better than a price target. But a price target has a great political advantage; it is much easier to generate public support for a policy to bring down the inflation rate than for a policy that promises to keep nominal income growing at a certain rate. And, given the pressures for more expansionary policies, a policy to reduce the inflation rate needs all the political support it can get."

IS THE FED RESPONSIBLE FOR HIGH INTEREST RATES?

From the end of 1976 to the spring of 1980, interest rates increased steadily and dramatically. The 90-day Treasury bill rate, for example, averaged 4.4 percent in December 1976, 6.1 percent a year later, 9.1 percent in December 1978, 12.1 percent in December 1979 and 15.5 percent in March 1980. With the imposition of credit controls in March 1980, interest rates plummetted. The 90-day bill rate averaged only 7.0 percent in June 1980. However, shortly after credit controls were relaxed, interest rates returned to pre-credit control levels. In December 1980, the 90-day bill rate averaged 15.7 percent. Interest rates peaked in 1981. The monthly average of the 90-day bill rate reached 16.3 percent in May 1981. It has decreased, albeit irregularly, ever since. In September 1982, it averaged 8.2 percent. Longer term interest rates peaked in the August-September 1981 period.

Respondents' views on interest rates are diverse and rich. Some placed the blame for high interest rates primarily on "loose" fiscal policy, including, and often especially, expected large *future* deficits. Others blamed "tight" money. Others wrote that both are to blame. However, many stated that "loose" money not "tight" money was to blame. They argued that fast money growth generated inflation and that in turn generated high inflationary expectations and pulled interest rates upward. Some also pointed out that interest rates have fallen as money growth and inflation have slowed. And some cited the volatility of money growth and other factors as creating a credibility problem with respect to continuing the fight on inflation as a major reason why the fall in interest rates has not been more rapid.

Finally, some respondents pointed out that the administration's program to shift resources into the defense sector places upward pressure on real interest rates. A rise in real long-term rates is required to induce people to postpone purchases of housing and other durables and thereby release financial and real resources to the defense sector. Excerpts from a sample of respondents' views on interest rates are set forth below.

Henry A. Latané: "The Fed's present policy has been a disaster. It should immediately lower interest rates by increasing M1."

Alan Reynolds: "The Federal Reserve explicitly controls the key interest rates on discount window borrowings and Federal funds. Those rates can be instantly and substantially reduced, as they eventually were in previous contractions (except 1932 and 1937).

"In order to simultaneously assure the markets in bonds and foreign exchange that monetary policy will never again accommodate a resurgence of inflation, there must be a legislated mandate to tighten if there is a sustained rise in prices that invariably give an early warning of inflation. A commitment to sell gold at a fixed price would achieve this purpose * * *."

Paul W. McCracken: "Monetary policy as currently conducted probably has had very little to do with high interest rates. What the Federal Reserve is haunted by, and for that matter the whole economy, is a long legacy of increasing inflationary monetary policy particularly during the latter half of the 1970's. It would be unrealistic to assume that financial markets and people generally will in a few months be believers about any proffered changes in a path for monetary policy that has been established over a period of years."

Paul A. Volcker: "Within the context of a longer-range policy of restraining money growth to damp inflation, fiscal policy looms large as a cause of high interest rates. The Treasury, in meeting the government's credit needs, must bid funds away from potential private borrowers and this competition for a limited pool of savings boosts interest rates above levels that would otherwise prevail. Moreover, intermediate- and long-term yields tend to reflect investors' expectations of future credit market pressures, so that the current prospect of large, perhaps growing, Federal budget deficits as the economy recovers is a major factor holding rates in some sectors of the markets higher than they otherwise would be. At the same time, the prospect of such large deficits and of sustained tensions in credit markets causes some people to fear that at some point the Federal Reserve will deviate from its course of restraint and engage in an inflationary 'monetization' of the debt, and this also tends to maintain a substantial inflation premium in long-term rates.

"These responses may be damaged in degree when the economy is weak and inflation is perceived to be slowing. * * * lasting relief from high interest rates requires that the Federal Reserve maintain a credible posture of anti-inflationary restraint."

Mark Willes: "A given deficit policy places limits on monetary policy. If budget deficits are persistently large, for example, the Fed's choice is between monetizing the debt and causing inflation or not monetizing it and causing higher real interest rates."

Robert F. Dee: "* * * to answer your last question—greater fiscal restraint, with action by Congress to retructure entitlements; a systematic adherence to a monetary policy by the Fed that would gradually reduce interest rates; and the adoption of legislation to encourage employment, saving and capital investment."

Michael Parkin: "My suspicion is that current high interest rates are almost entirely due to worldwide deficits by governments (not just the U.S. Federal deficit) and are in no way caused by the Fed's monetary policy."

Vincent L. Gregory: "The only real bright spot on the scene is the Federal Reserve and their policy of controlling the money supply in the face of these huge budget deficits. Obviously, this must result in high interest rates—but these are not due to any 'fault' in Federal Reserve policy but rather to the budget deficits resulting from action or lack of action by the Congress. Any efforts to bring down interest rates without reducing the huge budget deficits must result in runaway inflation and economic disaster for the U.S. and world economies."

Gottfried Haberler: "The principal cause of high interest rates was the large budget deficits. Large public sector borrowing drives up interest rates and crowds out private production investment.

"True, the Fed could temporarily reduce interest rates by easier money. But the consequence would be a reacceleration of inflation."

Stanley Fischer: "The mix of monetary and fiscal policy is jointly responsible for high interest rates. The Fed could reduce interest rates now by making open market purchases. These would stand less chance of re-igniting inflation if fiscal policy became more restrictive."

Martin Bronfennbrenner: "The combination of rising public deficits and falling monetary growth rates is largely responsible for high interest rates, and I for one cannot allocate the responsibility between them."

David Laidler: "I believe that the main reason for high nominal interest rates is high inflation expectations."

George G. Kaufman: "I believe that the current high interest rates are attributable to a number of factors, including a general lack of credibility in the Federal Reserve and Federal Government in maintaining the current reduced rates of inflation."

Alan C. Hess: "The expected real rate of interest has been quite high in 1982 but since receipt of your letter has fallen drastically, just as monetarist theory predicted. The explanation runs as follows. Inflation follows money with an approximate two-year lag. If the growth rate of the money supply is reduced, the real stock of money is also reduced since prices are still rising due to previous money growth. The unexpected fall in the real stock of money causes real interest rates to rise temporarily. Once the surprise is over, the real interest rate declines as economic activity and the rate of inflation slows."

John B. Taylor: "The Fed's disinflation effort is largely responsible for the high interest rates. When aggregate demand growth is reduced, the past trends in prices and especially wages cannot be instantaneously broken because of formal and informal contracts. These past trends in prices and wages continue to generate a growing demand for money and credit. When the growth of money and credit is reduced by the Fed's disinflation, interest rates must rise as supply falls short of demand. This is what has happened in the last two years."

David G. Rayboy: "When interest rates were high, it was because money was loose and volatile, triggering inflation expectations. Interest rates have fallen precisely because money growth has been slower. Thus, the prescription for lower interest rates is a credible, slow, stable monetary policy. This can be achieved by establishing a non-inflationary growth rate in the monetary base and ignoring short-run swings in M1, and by establishing a floating (punitive) discount rate. The move away from lagged reserve accounting was also a step in the right direction."

James Barth: "Until very recently, long-term rates of interest have been relatively stable and high due to the failure of the inflation premium to decline as money growth has trended downward and considerably reduced inflation. This failure is explainable, however. Fiscal and monetary policies appeared to be headed for a major clash. The prospect of large and growing Federal budget deficits resulting from sizable tax cuts without corresponding spending cuts undoubtedly led people to believe, based upon past performance, that the Federal Reserve would eventually monetize a large portion of these deficits, thereby throwing in the towel on its anti-inflation policy. The public was unpersuaded by all the Federal Reserve's rhetoric to the contrary. By adhering to its basic policy, however, the Federal Reserve now appears to have established sufficient credibility for inflationary expectations to be lowered, especially since the President and the Congress have finally decided to take steps to close the deficit gap (though admittedly by flip-flopping on taxes rather than further slowing the growth in government spending). To bring inflationary expectations down further, the Federal Reserve must continue to ensure that money will grow along a downward trending path. In this way, long-term interest rates should move progressively downwards, stabilizing close to the real rate of interest. Unless the growth rate is also steady, however, the short-term interest rate and output paths will likely be quite bumpy.

"* * * volatile or unsteady money growth rates increase uncertainty, thereby inducing individuals to request a risk premium in the form of a higher real rate to protect them from adverse interest rate movements. Failure of the Federal Reserve to provide a reasonably steady rate of declining money growth can therefore explain both the high and volatile short-term interest rates since October 1979."

Anna J. Schwartz: "The Fed is operating in a fashion that produces uncertainty in financial markets. The markets react by demanding and obtaining higher nominal interest rates than would be the case if economic agents believed the Fed was not going to revert to the form it has followed since the mid-1960s. When monetary growth accelerates to 12.5 percent per year, as from May 1980 to April 1981, what degree of confidence in the Fed's commitment to noninflationary monetary growth can markets have? The principal way the Fed can bring interest rates down, without imposing another recession, is to maintain the growth rate of money without the erratic swings that have characterized it in the past 33 months. Of course, the spectre of large deficits makes the markets nervous, and they should be reduced, but basically the interest rate problem lies at the door of the Fed."

J. Ernest Tanner: "I must conclude that the high interest rates are a result of lurching monetary policies and not due to slow steady growth as the quantity theory advocates, nor are high interest rates due to the expected Federal Government deficits."

David I. Fand: "In my opinion, monetary policy has only a small role in the current high interest rates. I think the extraordinary changes in the economy are largely responsible for high interest rates. The attempt to build up our defense would, all things equal, cause interest rates—especially long-term rates—to rise. The reallocation of resources toward defense, the relatively successful efforts to disinflate the economy, and our inability to cut (non-defense) government spending are key factors responsible for our high interest rates."

John Makin: "* * * historically high real interest rates during 1981 resulted from a combination of unexpectedly slow money growth, falling inflationary expectations and, to some extent, to a structural change in the cyclical pattern of fiscal budgetary deficits attributable to the sequence of tax cuts embodied in The Economic Recovery Act of 1981. Given the long period of accommodative monetary policy by the Federal Reserve prior to 1980, it was almost inevitable that actual followthrough on a serious program of inflation control by lowering and maintaining reduced money growth rates would produce transitional increases in expected real interest rates. This proved to be the case. Further, these effects occur promptly while negative impact upon nominal rates of reduced inflationary expectations occurs more gradually as the Fed gains credibility regarding its determination to slow inflation. Regarding fiscal policy, typically the financial markets can anticipate a drop in Federal budgetary deficits as the economy recovers and private sector credit demands rise. However, a schedule of annual reductions in personal tax rates through 1984 and subsequent indexing raises the possibility that this pattern will be broken and replaced by a situation where Federal budgetary deficits may rise during a recovery. The expected collision of private and public borrowing demands results in an expectation of historically high real interest rates.

"There is very little the Fed can do beyond what it is doing to reduce interest rates, save for an improvement in operating procedures which would, perhaps, result in somewhat less volatility of interest rates. Reductions in interest rates below levels prevalent now in August of 1982 will come fro mtwo sources. First, a broadening conviction of the Fed's determination to keep money growth at a level consistent with low and stable inflation. Second, and this event is by no means certain, a resolution of the uncertainty regarding a change in the traditional cyclical pattern of Federal budgetary deficits."

Raymond E. Lombra: "* * * the Fed has been following a path which is consistent with interest rates moving lower over time. Considerable improvement was, of course, experienced over the summer. More recently, the evidence of increased fiscal discipline which has surfaced has helped to sustain the downward movement in rates. Taking these developments into account and remembering past experience, suggestions about raising money growth further should be strongly rejected; whatever temporary relief was fostered would be more than swamped by the untoward effects ot the resulting erosion of the Fed's hard won creditability."

William G. Dewald: "High real interest rates that persisted through mid-August 1982 were largely though not wholly accountable to Federal Reserve policies that contributed significantly both to the level of inflation and to uncertainties with respect to its future course.

"* * * What the Federal Reserve needs to do now is to hold to a noninflationary monetary growth rate such as it has (inadvertently ?.)

achieved in the period February–June 1982 (1.3 percent M1 growth at an annual rate). The historical record indicates that an M1 growth of 3–4 percent would be noninflationary. Having achieved this and more (perhaps at a cost of slow real growth the remainder of this year), to keep interest rates falling, the Federal Reserve needs to stay with a noninflationary monetary growth policy."

Addendum: From June to mid-November (1982), M1 grew $25 billion or 5.5 percent. That works out to 15 percent per annum. If this latest surge in money growth is not stopped promptly, a new wave of inflation and rising interest rates is almost certain to occur as the recovery from the 1981 to 1982 recession proceeds.

ANSWERS TO THE QUESTIONNAIRE

BOARD OF GOVERNORS
OF THE
FEDERAL RESERVE SYSTEM
WASHINGTON, D. C. 20551

PAUL A. VOLCKER
CHAIRMAN

October 19, 1982

The Honorable Roger W. Jepsen
Vice Chairman
Joint Economic Committee
Washington, D.C. 20510

Dear Vice Chairman Jepsen:

Thank you for your letter posing several questions regarding monetarism and the Federal Reserve's conduct of monetary policy. As we agreed, in the interests of an orderly process and to avoid unnecessary duplication of effort, I am responding on behalf of my colleagues in the Federal Reserve to whom you addressed your letter after consultation with them. The enclosed reply represents the consensus of views, with the exception of one member of the group who supplied alternative outline replies to your questions 1 and 2, which are attached at the end.

I would also like to take this opportunity to comment on some very recent developments which have been the subject of considerable speculation in the press and which bear on your inquiry.

As you know, pursuant to the Full Employment and Balanced Growth Act of 1978, the Federal Reserve establishes and reports to the Congress annual target growth ranges for several monetary and credit aggregates.

Last February the Federal Reserve established a target range for each of the aggregates. In the course of the year, I have had several occasions to comment on the relationship of these target ranges to the financing needs of economic recovery consistent with continued progress toward price stability and on the need to take into account the behavior of several monetary aggregates and other variables in assessing the course of monetary policy. In restating the targets in July, I commented with some emphasis on developments in velocity and the possibility of exceptional demands for liquidity in a period of economic uncertainty and transition. I have indicated on a number of occasions that the Federal Open Market Committee would be satisfied with growth of the aggregates around the upper end of their ranges and would tolerate for a time growth at a faster pace if this appeared to be motivated by precautionary demands for money. In this regard, I would note that the level of M1 for the last week in September was within a few hundred million dollars of the level implied by growth through the year at a 5-1/2 percent rate.

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At its last meeting, the FOMC was faced with the almost certain expectation that the measurement of M1 over much of the remainder of this year would be distorted first by the passage of funds in maturing All Savers Certificates through M1 transactions accounts on their way to other investments and later by the introduction of a new money market fund-type account at depository institutions pursuant to the Garn-St Germain legislation. While the impact of the All-Savers maturity should be transitory--a matter of a few weeks--the introduction of a new deposit instrument is still more problematical in amount and timing (although the probability seems to be that it will depress, not increase, M1 growth). In either case, relying directly on M1 to build the "path" for the provision of reserves would give arbitrary results for the current period. Hence, deemphasis for a period of time seemed the only practical approach.

In view of all this, the Committee determined that for an interim period, while these distortions work themselves out, greater operational weight will be placed on M2 and lesser weight on M1. Obviously, we will glean what evidence we can from the M1 data--for instance, if the early October bulge did not subside, that would need to be taken into account in providing reserves, but we had no way of estimating in advance just how large the bulge would be. Despite what the press has reported, that is all there is to it with respect to M1, just an adjustment in operating procedures to take account of an expected series of technical developments.

I have discussed these points at greater length in a recent speech, excerpts of which I've enclosed for your information. This series of events, in my view, is a concrete illustration of "the practical monetary-oriented targeting approach pursued by the System," that I refer to in reply to your question 3.

If I can provide any additional information on this matter, please contact me.

Sincerely,

Enclosures

1. What is "monetarism"?

I'm not aware of any generally accepted all-purpose definition of the term. As a practical matter, I believe it would be fair to characterize it as referring to a view that monetary policy should be framed solely or primarily in terms of growth of certain money stock measures, which are presumed to bear reasonably stable relationships to other key economic variables, especially--over the medium or longer run--prices. Monetarists often view relatively sustained acceleration versus deceleration in money growth as a key factor explaining major cyclical movements in the economy but emphasize that over time monetary growth will be reflected in prices rather than output.

Within that general framework, "monetarists" may differ in emphasis on particular measures of money, on the length and nature of lags in effects on prices, on impacts on the "real" economy, and on relationships between money and interest rates. Whether a particular analyst considers himself, or is considered by others, to be "monetarist" often depends upon judgments on these matters. "Monetarism" is typically associated with those giving little or no weight to factors bearing on the price level other than "money."

"Monetarism" is also often associated with emphasis on techniques to control the money supply by controlling the growth of some aggregate of reserves, rather than by attempting to set the level of short-term interest rates.

2. Are changes in the demand for money frequent enough, large enough, and sufficiently long lasting to vitiate the usefulness of "monetarist" monetary policy? What about changes in real output?

Changes in the demand for money in relation to the nation's income, unless of moderate dimension and quickly reversed, would tend to vitiate the usefulness of what might be called a "strict" monetarist approach--that is, one in which the monetary authority sought to hold very precisely to a predetermined monetary growth path in both the short and long run. While there is some difference of professional opinion on this matter, research done by economists inside and outside the Federal Reserve System on the whole appears to confirm the common impression that in the past decade, which has been marked by major changes in financial institutions and cash management practices, there have been appreciable shifts from time to time in the public's demand for money to finance transactions or to hold for precautionary or liquidity reasons at given levels of income and interest rates. If ignored in the implementation of policy, these shifts would lead to a policy that was, depending on the direction of the shifts, either "tighter" or "easier" than intended in terms of impact on the real economy or prices. One significant consequence of an effort to enforce strictly predetermined money growth targets in the face of appreciable shifts in money demand would be greater instability in interest rates. However, as long as there is sufficient flexibility in implementation of policy to take account of ongoing changes in the public's attitude toward money, monetary aggregates within a reasonable range can provide a practicable long-run indicator of policy intent.

When the demand for money changes because of changes in real output, adherence to a given monetary target path would tend to result in cyclical variations in interest rates that help to stabilize growth in economic activity. Interest rates would tend to rise as the pace of economic activity quickened and to fall as it slowed. In that respect, use of monetary targets may represent a relatively efficacious approach to stabilization policy when there may be unexpected shifts in the public's demand for goods and services at given interest rate levels. An adjustment of monetary targets might be desirable, however, when there are unanticipated "supply shocks" to the economy, such as an OPEC oil embargo--but this is a complex issue requiring attention to the particular circumstances.

More generally, if price responses to monetary growth are long delayed and relatively weak, and output changes pronounced and lasting, the case for strict application of "monetarism" is weakened, at least unaccompanied by other policies directed towards those problems. Basic differences of opinion on this score underlie much of the controversy about "monetarism."

3. Is it correct to say that the Federal Reserve has been following a "monetarist" policy since October 1979?

The Federal Reserve has been focusing on the monetary aggregates as intermediate targets for policy since the early 1970s; since 1975, Congressional directives have required that the Board report objectives for monetary expansion. The change in October 1979 involved the means of implementing monetary policy; greater reliance was placed on control of the reserve base as the means of achieving desired monetary growth. That change was in a direction advocated by many "monetarists."

The change in operating technique should not, by itself, necessarily be viewed as "monetarist" in the strict terms indicated earlier, however. Such a judgment depends upon the degree of flexibility with which monetary objectives are pursued, including efforts to take account of perceived shifts in the public's attitude toward money.

In 1981, for example, the Federal Open Market Committee, responding to indications that changes in cash management behavior were reducing the public's desired holdings of M1 at given levels of interest rates and GNP, lowered its sights at midyear to the lower end of the target range initially set for the year. More recently, the System did not seek to reverse immediately a late-1981, early-1982 bulge in M1 that was concentrated in NOW accounts and seemed to be related largely to increased desires for liquidity on the part of the public during a period of economic uncertainty. Moreover, the FOMC has indicated its desire, in light of developments in the first half of the year, to see M1 grow at around the top end of its 1982 growth range; it also has indicated its willingness to tolerate movements above that range in the months ahead if economic and financial developments suggest a persistence of unusual precautionary demands for money.

This sort of flexibility--the willingness to look at all of the available information and to alter the monetary growth objectives in the light of current judgments--does not accord with the usual views of "strict" monetarists, but it is fundamental to the practical monetary-oriented targeting approach pursued by the System.

As indicated, the change that actually occurred in October 1979 was one involving the procedures employed in the pursuit of monetary targets. Up to that time the System focused on short-term interest rates, influenced through open market operations, as the day-to-day "operating target" for policy. We took action to raise or lower money market rates as needed to encourage the public to alter its cash holdings to the targeted level. In late 1979 we decided instead to employ nonborrowed reserves as the day-to-day operating target, and let interest rates fluctuate on their own. By focusing open market operations more directly on the growth of reserves in the banking system, we expected to attain a better control of money growth over time. Thus this change could be said to be more "monetarist," but much depends on the manner and on the kind and degree of judgment used in applying the control techniques.

4. Did implementation of the Credit Control Act in March 1980 interrupt the "monetarist" policy announced in October 1979, and how would you characterize Fed policy since that time?

The public's reaction to the credit control program was unexpectedly sharp. The marked contraction in borrowing after the program was instituted, and the resurgence in borrowing as it was unwound, led to sizable fluctuations in money balances and interest rates--first downward then upward. While the credit control program contributed to short run variability in money, our aim over the period was to keep money growth on track on average and over time. Certainly the use of explicit credit restraints was not, in itself, monetarist. While the monetary aggregates were in fact thrown off course for a period, those restraints in conception were considered supplementary to, rather than inconsistent with, the techniques announced in October 1979. Thus, that episode is not appropriately viewed as an "interruption" in policy intentions with respect to control of the monetary aggregates.

5. If not, then what change actually occurred in October 1979, and how would you characterize Fed policy since that time?

As I noted above, in responding to question 3, what occurred in October 1979 was a change in operating procedures undertaken to improve monetary control. I would say that our policy has been, and remains, one of containing the growth of money and credit to a rate consistent with reducing inflationary pressures in the economy and laying the groundwork for a sustained, balanced economic expansion.

6. How do you feel about moving toward a "price rule" for monetary policy?

I interpret "price rule" to involve the price of goods and services, rather than an interest rate or exchange rate. I think there is a good deal to be said in principle for placing a focus on the general level of prices over time as an ultimate guide for monetary policy. Economists of many theoretical persuasions would agree that, over the long run, the greatest impact of money is on the price level. The difficulty I see, as a practical matter, is that this relationship may be a long-term one, and that therefore current price movements--whether of broad price indexes, of limited "baskets" of commodities, or even of single commodities like gold--may not be uniquely useful as guides for policy in the short run.

We certainly pay close attention to price movements and trends in assessing the impact and appropriateness of our actions, and some of us believe clear articulation of price stability as a basic long-run goal is helpful. However, the realities of the structure of the economy would make a rigid short-run price rule a potentially counterproductive approach--one that might result in greater monetary and economic instability.

7. To what extent is monetary policy, as currently conducted by the Fed, responsible for high interest rates, as opposed to fiscal policy, and what policy changes, if any, should the Fed make today in order to reduce interest rates?

Interest rates are determined by a complex interaction of many forces, including monetary and fiscal policy, but private behavior--including expectations of inflation--is often critically important. For instance, if at a time of strong inflationary concerns and high credit demands the Federal Reserve opened the monetary "tap" and poured reserves into the banking system, any resultant lowering interest rates would likely be short-lived. Perceptions that the Federal Reserve was abandoning anti-inflationary restraint would quickly lead to renewed upward pressures on interest rates as people came to expect more rapid price increases and acted accordingly, increasing credit demands in the process and reducing savings.

Within the context of a longer-range policy of restraining money growth to damp inflation, fiscal policy looms large as a cause of high interest rates. The Treasury, in meeting the government's credit needs, must bid funds away from potential private borrowers and this competition for a limited pool of savings boosts interest rates above levels that would otherwise prevail. Moreover, intermediate- and long-term yields tend to reflect investors' expectations of future credit market pressures, so that the current prospect of large, perhaps growing, federal budget deficits as the economy recovers is a major factor holding rates in some sectors of the markets higher than they otherwise would be. At the same time, the prospect of such large deficits and of sustained tensions in credit markets causes some people to fear that at some point the Federal Reserve will deviate from its course of restraint and engage in an inflationary "monetization" of the debt, and this also tends to maintain a substantial inflation premium in long-term rates.

These responses may be damped in degree when the economy is weak and inflation is perceived to be slowing. With more confidence in the medium- and longer-term price outlook, and with private credit demands sluggish, increases in the money supply might normally be associated, at least for a time, with lower interest rates, and future Treasury borrowing might then be a less acute concern. In particular circumstances, these potential reactions are a matter of judgment. In any event, lasting relief from high interest rates requires that the Federal Reserve maintain a credible posture of anti-inflationary restraint. To the degree that is achieved, greater flexibility in management of the money supply in the short-run is possible, consistent with lower interest rates. Meanwhile, the Congress and the Administration can help to alleviate the pressures on rates by moving forward with their efforts to restore fiscal balance.

DISSENTS ON QUESTIONS 1 AND 2 BY A FEDERAL RESERVE OFFICIAL

Question 1: "What is Monetarism?"

Several journal articles have attempted to summarize the principal distinguishing scientific hypotheses that characterize a monetarist view. Generally, these hypotheses concern the effects of changes in money stock growth on economic performance. Some central hypotheses for monetary policy in the U.S. are detailed below.

(1) Monetarists emphasize that inflation is a monetary phenomenon. An anti-inflation policy is inherently one that sustains a relatively lower rate of growth of narrow monetary aggregates.

(2) Monetarists emphasize that accelerations or decelerations in money growth have relatively quick impacts on aggregate demand, with their permanent impact on inflation occurring with a longer lag. As a result, accelerations or decelerations in money growth are a key factor in cyclical movements in output and employment.

(3) Monetarists emphasize the direct link between inflationary expectations and nominal interest rates. Since inflation is largely determined by the pace of monetary expansion, interest rates tend to fluctuate in the same direction as the growth rate of the money stock, rather than inversely.

(4) Monetarism also involves the study of money stock control, since variations in money stock growth have important effects on economic performance. Such research tends toward the conclusion that central bank procedures that control the money stock directly (i.e., through manipulation of some part or all of reserves or the money stock provided by the central bank) rather than indirectly (through influences on short-term interest rates) are likely to be simpler, more successful, and therefore more credible.

Question 2: "Are changes in the demand for money frequent enough, large enough, and sufficiently long lasting to vitiate the usefulness of "monetarist" monetary policy? What about changes in real output?"

The answer to this question should include the following points:

(1) The evidence on the nature of money demand shifts is not as conclusive as the response implies. There is, in fact, evidence indicating that the demand for money function has not been subjected to large, frequent nor unforseen shifts during the past few years. This evidence is found directly in formal studies on the money demand relationship and indirectly in studies that have shown the M1-GNP link to be reliable during the past few years.

(2) Although large, frequent, unforseen shifts in the demand for money may cause problems under a monetary aggregate targeting procedure, the alternative--interest rate targeting--is not necessarily preferrable. The relationship between interest rates and economic activity may have weakened at the same time.

(3) Instability in the money demand relationship, to the extent it exists, is, in large part, the outcome of a reaction to high rates of inflation, interest rates and attempts by institutions to circumvent restrictive regulations on interest rate payments. A monetary targeting approach that reduces future inflation also reduces future interest rates and, consequently, the impetus to innovate.

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September 20, 1982

Honorable Roger W. Jepsen
Vice Chairman
Joint Economic Committee
Congress of the United States
Washington, D.C. 20510

Dear Senator Jepsen:

Your letter to me of August 5 posed questions with far-reaching significance for the future economic health of our country. I appreciate this opportunity to present my views.

In response to your first question, "What is Monetarism?" I think one can say, we are all monetarists now if attention to monetary growth as a crucial factor for economic health is a criterion. Somewhat tongue-in-cheek, but not wholly in jest, I have worked out the following method of classifying monetarists, which I hope may provide some enlightenment as well as amusement:

Some Modern Varieties of Monetarists

(An elaboration of the statement we are all monetarists now...)

Name of Type	Brief Description
Exaggerated or naive monetarist	There is a strong short-run correlation (99.9% is not surprising) between the money supply, money GNP, and the price level.
Cameo monetarist	Glad to make an appearance on behalf of control of the money supply and many other economic variables. In general, everything matters.
Assymmetric monetarist	Money growth is very difficult to measure; and if you could measure it, it doesn't matter much, except when it's too slow. Then it matters very much.
Creeping assymmetric monetarist	Regardless of the present rate of money growth, it could be just a little faster (by 1 percent or 1 1/2 percent) without causing inflation, and that would be the correct growth rate.

Commodity target monetarists	Scrupulously manage the quantity of money in circulation by having the government buy and sell a commodity (or group of commodities) to offset any significant changes in the price of the commodity from a given pegged price range. This requires the government to carry a large inventory of the commodity, a requirement that can be very rewarding to those who own or can produce sufficient quantities of the commodity. Gold can be used as such a commodity, with the target price set near some present market price (with world prices of gold gyrating, this is called "pinning the tail on a wild donkey") that will not be so low relative to the market price as to cause a depression nor so high as to cause a massive inflation during the adjustment period. Ignore changes in the supply of gold (perhaps engineered by world's largest producers, the Soviet Union and South Africa). Some advertise this extreme quantity rule (much more rigorous with respect to short-run control of the money supply than that of the conventional monetarist) for money as a change to a quality, not a quantity, rule.
Distant target monetarist	Conduct daily Federal Reserve open-market operations, using the price level, the quantity of aggregate credit, or other targets that are more distant targets than the growth of the money supply, as signals for changing the money supply. The transmission mechanism and effects from changing today's money supply (that may not fully affect these targets until as many as two years later) on the economy need to be examined.
Changing target monetarist	One who advocated fast money growth to bring down interest rates and saw the rates fall with slow money growth. How about real interest rates?
Conventional monetarist	There has been in the U.S. in the post-World War II period a rough but persuasive relationship between money growth and real economic growth 3 to 6 months

later, and between money growth and the price level in the neighborhood of 1-1/2 to 2-1/2 years later. Neither the timing of the relationship nor the future condition of the economy are known with enough precision to follow an anticyclical policy. Some conventional monetarists want a rule of roughly constant monetary growth using 3 to 6 month averages as a measure. Others advocate a more flexible policy during depressions.

Central Bank monetarist	Since we have been in charge of monetary policy during long periods of fast and slow money growth, we absolve ourselves from substantial responsibility over money growth by emphasizing that even though we like and support monetary targets, money doesn't matter very much; even if it did, we can't measure it very accurately; and even if we could, we can't control it very much.
One-issue-at-a-time monetarist	When inflation is reduced, speed up money growth to cure unemployment, and when unemployment is reduced, slow down money growth to cure inflation. If the result is a period of stagflation -- high inflation with unemployment -- fight unemployment with fast money growth.
Multiple target monetarist	Base control of the money supply on many targets, such as interest rates, monetary targets, the price level, output, and so on. Where conflicts arise, make a decision.
Interest rate target monetarist	Manage the money supply so as to peg market interest rates at a desired level. If the desired level is below market rates, have faster money growth, and if the desired level is above market rates, immediately restrict the money growth. Instead of an adjustment in interest rates, the government will adjust money growth. This system was essentially followed by the Federal Reserve for many years. It can be compatible with a desired level of money growth if the market rates of interest can be predicted in advance on a daily

basis. Since bond markets have been found to exhibit nearly random fluctuations in price, that type of prediction is not now feasible.

In response to your second question -- "Are changes in the demand for money frequent enough, large enough, and sufficiently long lasting to vitiate the usefulness of 'monetarist' monetary policy? What about changes in real output?" -- one can begin by looking at the ratio of money (M1) to nominal GNP, a ratio called velocity. Over the period of a quarter of a year, it bounces around from all manner of causal factors. For example, a rapid increase in the money supply will cause individuals to temporarily hold more money. This is an increase in the demand for money and a reduction in the velocity of money. Trying to offset these short-run changes in the demand for money with changes in monetary growth produces increased disturbances in the short-run demand for money.

The central bank has complained of the difficulties in determining the proper path of money growth engendered by changes in the demand for money. It has also been reluctant to adopt improved control procedures for the money supply, and has added to the confusion by inventing and then abruptly abandoning new types of monetary aggregates such as M1+ and M1B adjusted. All of this tends to obscure the failures that the Federal Reserve has experienced in adhering to its announced targets.

Three-year averages of the rate of change of velocity have been close enough to a trend line to determine that rapid increases in the money supply or sharp decelerations are very harmful to the economy. A moderate rate of M1 growth with the assurance that fast money growth will not again be the result of future Federal Reserve actions, and the immediate implementation of the appropriate monetary control procedures, would be very beneficial to the economy. We would not have to pay again the devastating costs of a recession caused by the need to bring monetary growth back down near noninflationary levels. Although a rapid surge in money growth may spur output and reduce unemployment in 3 - 7 months, that policy would require another costly adjustment period.

I think it is an essential part of disinflationary monetary policy to aid poor citizens, who are significantly injured by it. As a general welfare program for the future, we should rationalize our welfare programs and stop the present disorganized slashing that is perceived to be a threat by large segments of the population. Scrap most of the present welfare programs and put in place a negative income tax of the type advocated by both political parties during the Nixon-McGovern presidential contest.

(The national experiments that examined the negative income tax were fundamentally flawed.)

In answer to questions (3) -- "Is it correct to say that the Federal Reserve has been following a 'monetarist' policy since October 1979?", (4) "Did implementation of the Credit Control Act in March 1980 interrupt the 'monetarist' policy announced in October 1979? If so, how and for how long?", and (5) "If not, then what change actually occurred in October 1979, and how would you characterize Fed policy since that time?" -- I believe the implementation of the Credit Control Act in March 1980 disrupted monetary policy, to say nothing of the hardships it caused on credit card owners who had their outstanding credit balances suddenly reduced or eliminated under a false banner of fighting inflation. The public increased the ratio of cash to deposits it held over what it would have held, causing the money supply to contract sharply. The Federal Reserve failed to adopt proper money supply control procedures following its announcement in October 1979 that it would concentrate on controlling the money supply. To avoid going through the lower bound on its interest rate target range, it violently contracted the money supply and thereby helped to drive the economy into a ditch, increasing unemployment to 7.5 percent by May 1980. The results of the implementation of the credit control act, combined with poor monetary control procedures and the effect of an election year on our monetary managers, were especially unfortunate.

The chairman of the Federal Reserve testified to the Congress in the summer of 1980 after five months of negative growth in M1 that they would not reinflate (Budget Committee of the U.S. Senate, July 24, 1980). The Federal Reserve had already begun to inflate with record money growth up until November 1980.

The Federal Reserve policy since October 1979 has generally been ~~00en~~ successful in moving money growth toward lower average levels. The record is marred by long episodes of monetary growth in different directions away from that general trend.

In response to question (6) -- "How do you feel about moving towards a 'price rule' for monetary policy?" -- see the explanation of the distant target monetarist in the table. Of course, the ultimate targets include long-run price stability, but as an operating tool for daily monetary policy, it would be a disaster. We simply do not know enough about the linkages between daily monetary operations and the price level to use the price level as the proximate operating target.

In response to question (7) -- "To what extent is monetary policy, as currently conducted by the Fed, responsible for high interest rates, as opposed to fiscal policy, and what policy changes, if any, should the Fed make today in order to reduce interest rates?" -- I would first put fiscal policy in perspective.

A borrowed deficit is financed by selling Treasury debt instruments to the public. The effect of suddenly increasing the supply of debt instruments is to temporarily reduce their price -- which means their yield or interest rate rises. The supply of loanable funds (new money growth plus saving out of current income) is not permanently curtailed, since the funds borrowed by the government are respent in the form of deficit spending. The result is that interest rates are temporarily but not permanently altered by a sudden large borrowed deficit.

The effect of fast money growth that can also be used to finance a deficit is well known; we are paying for past fast money growth policies now.

In addition, one must look at active deficits (deficits caused by new spending programs) and passive deficits (deficits caused by a reduction in inflation and economic growth which lower taxable income growth). Passive deficits generate less pressure on interest rates than active deficits (which can also crowd out private investment as can higher taxes and fast money growth).

A better perspective than a view confined to deficits is obtained by looking at how total government spending is financed. It can be financed by:

1. Money creation,
2. Borrowed funds, or
3. Taxes.

To proclaim that the first two methods of financing spending (which are labelled "deficit financing") have less detrimental effects on the economy than the third, taxes, can be a misleading. The interest rate effect of financing by borrowing or the inflationary effects of finance by money creation can be harmful to economic growth and so can tax increases. The attempt to garner more resources into the public sector, whether it be for defense or welfare programs, will pull down private savings and temporarily raise real interest rates. Tax increases that tax private income, so that less is saved, can temporarily achieve this result; although, since they reduce output, real interest rates will fall with the subsequent decline in spending.

These real interest rate changes for the range of deficits the U.S. has been experiencing since the 1950s (as a percent of GNP), have been completely overshadowed by fast money growth as an influence on market rates of interest.

To achieve a steady moderate rate of money growth, the Federal Reserve must immediately adopt appropriate control procedures for the money supply. To ensure that money growth does not return to a level that again debases our currency and requires a recession to correct, rules for preventing future fast money growth must be imposed on the Federal Reserve. The Federal Reserve must be required to abandon the roller-coaster policy of alternating lengthy periods of fast money growth followed by slower money growth which it has implemented at least since 1976. There seems little prospect that such a change of policy will be effectuated without a legislative mandate.

Sincerely,

Robert D. Auerbach

Robert D. Auerbach, President
Robert D. Auerbach, Inc.

THE
GEORGE
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Washington, D.C. 20052 / Department of Economics

August 20, 1982

The Honorable Roger W. Jepsen
Vice-Chairman, Joint Economic Committee
Congress of the United States
Washington, D. C. 20510

Dear Senator Jepsen:

Thank you for your recent letter requesting my response to a series of questions on the relationship between interest rates and Federal Reserve policy. This is certainly an appropriate time to examine more closely this relationship given what appears to be an increasingly vocal opposition to the policies announced by the Federal Reserve in October of 1979. What particularly disturbs me is not the opposition to Federal Reserve policy but the presumption that since the October announcement, the Fed has been pursuing a monetarist policy. It further disturbs me that this presumption then serves as the basis for the view being expressed by some that the high interest rates during the past few years are a sign that monetarism has not worked and that now is the time for the Federal Reserve to return to its old pattern of accelerating monetary growth whenever interest rates are rising or not as low as one would like. To me, such a view reflects an inaccurate understanding of monetarism and a failure to appreciate the historical record regarding the Fed's performance when it comes to constantly manipulating the monetary brake and accelerator.

In addition to my response to your questions, I am enclosing a copy of a recent paper I have written entitled, "A Primer on Budget Deficits," which may be of interest to you. If I may be of any further assistance, please contact me.

Sincerely yours,

James Barth

James Barth
Professor of Economics

JB:el

"Federal Reserve Policy and High Interest Rates"

Dr. James R. Barth
Department of Economics
George Washington University

What is Monetarism?

Monetarism is essentially the view that the economy is inherently more stable without government interventionist policies than with such policies. This does not mean that monetarists believe that business cycles would be nonexistent if it were not for the active use of demand management policies by the government. Instead, it is believed that in a world of uncertainty and thus limited information attempts by the government to smooth cyclical movements in real output only amplify those movements. If the government were to replace activist fiscal and monetary policies with fixed rules there would still be business cycles, but it is believed that the remaining cycles would be significantly smaller in magnitude. The reason for this belief is based on the notion that in a world of uncertainty economic agents act based upon the information that is available to them. By following fixed rules that are known to economic agents, then more information is available to be processed so that informational errors can be reduced. The result is a more efficient allocation of resources and reduced fluctuations in output.

Of course, nothing that has thus far been said implies that monetarists are opposed to all government activities. All that has been said is that monetarists oppose the active use of fiscal and monetary policy in an attempt to stabilize the economy. There is still an important role to be played by the government. Once this role has been decided upon, however, it should be financed by setting tax rates to obtain the necessary revenues. This means that the budget would be balanced on average, with surpluses occurring during the cyclical downswings. At the same time, monetary policy would provide for a moderate and steady rate of money growth, thereby constraining inflation while simultaneously providing the money balances necessary to accomodate an ever expanding volume of transactions.

Finally, by believing that fixed rules are preferable to activist policies for dealing with business cycles, in no way precludes a change in these rules. Over time, technological and productivity changes may dictate a modification in the specific rule that is implemented. But such modifications would be expected to occur only over longer periods of time, not on a frequent basis reflecting normal cyclical factors.

Money Demand Shifts

It is claimed by some that changes in the demand for money are "frequent enough, large enough, and sufficiently long lasting to vitiate the usefulness of 'monetarist' monetary policy." This claim is based upon the notion that if the monetary authorities adopt a fixed money growth rule, then all fluctuations in nominal gross national product can be reduced if the monetary authorities actively try to manipulate the money supply so as to offset as much as possible any fluctuations in velocity. The major problem with this view is that it requires that one be able to anticipate all fluctuations in velocity, or shifts in money demand. This, of course, is not humanly possible. In such a situation, one would attempt to determine the anticipated movements in velocity, or money demand shifts, fully realizing that there will also be some unanticipated movements. There is considerable empirical evidence bearing on just this issue. Specifically, it is reasonable to view velocity as growing at an historically determined trend rate (the anticipated component), with random deviations about that trend (the unanticipated component). Based upon this view, the monetary authorities cannot consciously manipulate the money supply so as to offset all movements in velocity, because some of the movements are random and thus cannot be anticipated. But by persisting in the attempt to do so, the monetary authorities can make matters worse. Constant reversals in money growth rates can generate changing inflationary expectations and thereby lead to greater money demand shifts than would otherwise occur.

In sum, the weight of the evidence does not support the view that a monetarist prescription for monetary policy is useless due to frequent, large, and long-lasting shifts in money demand. The same conclusion applies to changes in real output.

Announced Federal Reserve Policy Since October 1979

On October 6, 1979 the Federal Reserve announced that it was changing its operating procedures to control the money supply. Prior to that time, the procedures being implemented were aimed at controlling interest rates. Since that historic announcement the record does indeed indicate that the Federal Reserve has reduced the average growth rate in the money supply. But this fact is insufficient to conclude that the Federal Reserve has been following a monetarist policy. The reason is that monetarism is based on the view that the Federal Reserve should pursue a policy that leads to a moderate and steady (and thus predictable) rate of money growth. A growth rate in money that is on average moderate but wildly unsteady is not consistent with monetarism. The record for money growth rates since October 1979 clearly indicates that the Federal Reserve has slowed money growth, but has not done so in a steady fashion. It is therefore totally unfair to say that the Federal Reserve has been following a policy fully in accord with monetarism since October 1979.

The March 1980 Credit Control Act

As a part of President Carter's new anti-inflation program announced on March 14, 1980, the Federal Reserve imposed selective credit controls under the first application of authority granted it by the Credit Control Act of 1969. These controls were essentially phased out by the Federal Reserve in July 1980. Given the timing of the imposition and elimination of the controls, it is no accident that money growth (M1B) plummeted at a negative annulaized rate of 16.8 percent in April of 1980 and then exploded at a positive annualized rate of 21.6 percent in August of 1980. Interestingly enough, as money growth declined during the spring quarter so did nominal GNP (-1.1 percent) and when it rose during the summer quarter so did nominal GNP (11.8 percent). Although the initiation and termination of the credit controls no doubt explains part of the pro-cyclicality of money growth and nominal GNP growth, the pro-cyclicality was not confined to this short-lived period nor indeed to just 1981. At most, therefore, the imposition and elimination of credit controls explains the wide swings in money growth rates during the second and third quarters of 1980. The controls cannot, however, explain the substantial unsteady growth rates in money during the entire post-October 6, 1980 period.

Finally, the experience with credit controls during 1980 has provided important additional evidence that substantial swings in actual money growth rates may be due to money supply shocks, not just money demand shifts as many have contended.

Actual Federal Reserve Policy Since October 1979

Until October 6, 1979, the Federal Reserve essentially set targets for interest rates and allowed money supply to adjust to money demand. Since then, however, this process has essentially been reversed. The Federal Reserve now sets targets for money growth and allows interest rates to fluctuate. However, the particular operating strategy chosen by the Federal Reserve to implement this policy depends crucially upon interest rates. The reason is that to achieve its money targets the Federal Reserve sets targets for non-borrowed reserves. These latter targets are based upon the Federal Reserve's forecasts for money demand and borrowed reserves, which in turn are dependent upon interest rate forecasts. Any errors made in predicting interest rates will therefore cause money growth to deviate from its targeted path. Many contend that all of the errors that occur are due to unpredictable shifts in money demand and/or difficulties in estimating the borrowings relationship. However, this view overlooks the fact that swings in money growth rates could be due to money supply shocks, not just shifts in money demand. More importantly, it fails to come to grips with the fundamental issue of whether one can distinguish between movements in interest rates that are longer-term and movements that are temporary. If not, then it is not clear how the Federal Reserve can achieve its money growth rate targets based upon current operating procedures. For clearly the impact of interest rate movements on money demand will differ depending upon whether they are "permanent" or "transitory." The Federal Reserve will therefore wish to adjust non-borrowed reserves differently for the two types of movements. But, unfortunately, available evidence indicates that it is not currently possible to forecast both types of movements in interest rates. Since this is the case, the Federal Reserve could be over-and/or under-reacting to its money demand forecasts and thus accentuating the swings in money growth rates. In other words, the current operating procedures which focus on non-borrowed reserves and rely heavily on money demand and borrowings forecasts could be making the ups and downs in the rates of money growth greater than they would be if a different operating procedure were being followed. Of course, the current operating procedure is clearly sufficient for reversing the upward trend in the rate of money growth that has prevailed during the past fifteen years or so.

A "Price Rule" for Monetary Policy

Under a price rule for monetary policy, the Federal Reserve would presumably use its tools, primarily open-market operations, to stabilize an index of prices. By stabilizing prices economic agents would be better able to predict prices and thus make appropriate choices involving the allocation of resources under conditions of uncertainty. The issue, of course, is whether price level predictability is improved more by a passive money growth rate rule or by an active manipulation of the rate of money growth so as to achieve a targeted level of prices for a selected group of commodities. Under the latter approach, it is believed that the targeted prices would be representative of and thus highly correlated with all prices. Based upon available evidence, it seems to me that price level predictability is more likely to be achieved by a fixed money growth rate rule than by a "price rule." However, one should not overlook the possibility that evidence may change this situation.

High Interest Rates - Fiscal Vs. Monetary Policy

To begin, the Federal Reserve is to be commended for having reduced the average rate of money growth since October 1979. Despite those who argue otherwise, now is not the time for the Federal Reserve to reverse this policy and reinflate the economy by pumping up the money growth rate. There are finally signs that the credibility of the Federal Reserve is rising as it continues to implement its announced anti-inflationary money growth rate policy. And the only way to reduce inflationary expectations is for the Federal Reserve to pursue a policy that is credible. Expectations about future inflation depend mainly on what the public believes the Federal Reserve will do in the future, which is not necessarily what the Federal Reserve says it will do. The problem is that the historical record reveals a sizeable gap between the Federal Reserve's announcements and its actions. It is therefore no surprise that the Federal Reserve's credibility has diminished to the point that a demonstrated commitment to a stated policy over a sustained period of time is now required to convince the public that business is no longer being conducted as usual. Any abrupt changes in monetary policy today would only increase uncertainty and undermine the Federal Reserve's attempt to establish credibility. While not making any basic changes in its anti-inflationary policy, the Federal Reserve should, however, provide for a more steady rate of money growth.

Now to discuss the extent to which "monetary policy, as currently conducted by the Fed, [is] responsible for high interest rates, as opposed to fiscal policy." To deal with this issue, it is useful to realize that nominal interest rates consist of two basic components: (1) a real component, and (2) an inflationary expectations component. In other words, the nominal interest rate essentially consists of a real interest rate plus an inflation premium. Until very recently, long-term rates of interest have been relatively stable and high due to the failure of the inflation premium to decline as money growth has trended downward and considerably reduced inflation. This failure is explainable, however. Fiscal and monetary policies appeared to be headed for a major clash. The prospect of large and growing federal budget deficits resulting from sizeable tax cuts without corresponding spending cuts undoubtedly led people to believe, based upon past performance, that the Federal Reserve would eventually monetize a large portion of these deficits, thereby throwing in the towel on its anti-inflation policy. The public was unpersuaded by all the Federal Reserve's rhetoric to the contrary. By adhering to its basic policy, however, the Federal Reserve now appears to have established sufficient credibility for inflationary expectations to be lowered, especially since the President and the Congress have finally decided to take steps to close the deficit gap (though admittedly by flip-flopping on taxes rather than further slowing the growth in government spending). To bring inflationary expectations down further the Federal Reserve must continue to ensure that money will grow along a downward trending path. In this way, long-term interest rates should move progressively downwards, stabilizing close to the real rate of interest. Unless the growth rate is also steady, however, the short-term interest rate and output paths will likely be quite bumpy.

As regards short-term rates of interest, there are the same two components. Now, however, inflationary expectations apply to a relatively short period into the future. This means that deviations in money growth rates from trend will mainly determine the inflationary expectations embodied in short-term interest rates. As rates of money growth fluctuate over the short-run this will lead to corresponding fluctuations in inflationary expectations and thus short-term interest rates. Furthermore, there is reason to believe that volatile or unsteady money growth rates increase uncertainty, thereby inducing individuals to request a risk premium in the form of a higher real rate to protect them from adverse interest rate movements. Failure of the Federal Reserve to provide a reasonably steady rate of declining money growth can therefore explain both the high and volitile short-term interest rates since October 1979.

In sum, risk and inflationary expectations are important determinants of interest rates. Both of these factors, moreover, are strongly affected by the actions of the Federal Reserve. To minimize the adverse impact of these factors on interest rates the Federal Reserve should adhere to a policy of providing for a steadily declining rate of money growth. One should realize that such a policy will not eliminate business cycles. But it should lessen their severity and provide more appropriate conditions for increased and sustainable long-term growth. Lastly, with respect to fiscal policy, once the level of government spending has been determined tax rates should be set so as to balance the budget, not each and every year, but over the course of the business cycle. In conclusion, one has to resist the temptation to succumb to the view that the government, through the constant and active manipulation of its fiscal and monetary tools, can eliminate business cycles and guarantee long-term prosperity. The weight of the evidence opposes this view. In a world of uncertainty, where real interest rates are not even observable except ex post or after economic decisions have been made, the government should not add to this uncertainty, which on the basis of currently available economic knowledge is best done by pre-announcing and then adhering to fixed rules of behavior. Such a policy, it should be added, in no way precludes the government from playing an important role in the economy, including the provision of services to the truly needy and poor.

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1982 AUG 17 PM 5 41

August 11, 1982

The Honorable Roger W. Jepsen, U.S.S.
Vice-Chairman
Joint Economic Committee
U.S. Congress
Washington, DC 20510

Dear Senator Jepsen:

I have a copy of your letter of August 5 addressed to someone else, but presume from the envelope that I too am on your mailing list and that your office, like others, is not error-free.

Let me now attempt to answer your seven questions, briefly but I hope usefully:

1. Monetarism is the belief that control of the money supply is our best "handle" for control of the entire macro-economy (income, employment, price levels, interest rates, etc.). For more detail, see Thomas Mayer (ed.) The Structure of Monetarism, especially the editor's own chapter.

2. It has been shown (Professor William Poole of Brown University is my "authority" here) that when the demand for money shifts — or rather, when there is a shift in demand between domestic money and other assets — the resulting variation in income and employment is usually less when the monetary authorities follow a constant-monetary-growth rule or stay on the pre-existing money-supply function than when they try to hold interest rates constant.

The principal weakness of monetarism, as I see it, is rather the failure of various "money supply" concepts to move together, so that it makes a great difference which one the Federal Reserve uses. This is particularly true when ingenious bankers, borrowers, and lenders are able to shift assets from controlled to uncontrolled categories. In my view, the correct concept to use is the so-called monetary base, over which the Federal Reserve has the largest measure of control.

3. The Federal Reserve claims to have been following a monetarist policy since October 1979, but its critics, notably the Shadow Open Market Committee (Professors Karl Brunner of Rochester and Allan Meltzer of Carnegie-Mellon are leading members) think it has made significant departures in practice. Certainly neither the Board, nor its staff, nor the majority of the 12 Federal Reserve Banks are unanimously monetarist.

4. The Credit Control Act of 1980 was an attempt to ration credit. It can be explained as an attempt to avoid the short run interest-rate consequences of reducing monetary growth rates. Such rationing forms no part of monetarist doctrine. I do not believe the Act remained in effect for long enough to make much difference.

5. I should regard Fed policy since October 1979 as predominantly but unskillfully monetarist, with constant foot-dragging by anti-monetarists and constant possibility of reversal.

6. This "price-rule" was standard doctrine when I was going to school (1930s). It is associated in America with the great name of Irving Fisher of Yale (1867-1947). It is strange to see it revived as a novelty.

The problems with it are on the quantitative side. How much of a change in the price level or the inflation rate should trigger how large a change in what monetary variables? And also, how long and variable is the time lag between a change in monetary policy and the resulting change in the price level!

7. The combination of rising public deficits and falling monetary growth rates is largely responsible for high interest rates, and I for one cannot allocate the responsibility between them. Being only indirectly controlled by either Congress or the Administration, the Fed has replaced OPEC as a favorite Washington whipping-boy. I do not believe the Fed should now increase the monetary growth rate; while this would temporarily lower interest rates, they would "snap back" (but not till after election, I suppose) when the resulting inflation took hold.

My personal belief is that the Administration erred in (1) placing inordinate faith in the Laffer Curve, which itself shifts with business conditions, in (2) not asking from Congress impoundment powers on the expenditure side, when it could have obtained them, and (3) not seeking to "dis-entitle" our "entitlement programs" by placing caps or ceilings on amounts to be spent in carrying them out. (The farm-price support and food-stamp programs are examples here.)

Sincerely yours,

M. Bronfenbrenner

Martin Bronfenbrenner
Kenan Professor of Economics

MB:mrr

SmithKline Beckman
CORPORATION

Robert F. Dee, Chairman of the Board
215/751-5555

1982 AUG 27 PM 4: 12

August 23, 1982

The Honorable Roger W. Jepsen
Vice Chairman
Joint Economic Committee
Washington, DC 20510

Dear Senator Jepsen:

Thank you for your letter of August 5 inviting my comment on monetary policy. I do have a view on this matter, and I will address your seven questions in my response.

It seems to me that there are three major elements to be considered.

The first is the fundamental productive capacity of the nation, its skills, technology and capital. The second is federal fiscal policy, often determined on the basis of political rather than economic considerations, which stimulates or restrains the growth of output. The third is the monetary policy of the Federal Reserve. These three are interrelated.

"Monetarism" is generally defined (your first question) as the theory that the money supply should be expanded at a steady rate. To answer your second and third questions, the Federal Reserve is restraining the growth of money, but whether this should properly be called "monetarism" is debatable.

Your fourth and fifth questions relate to implementation of the Credit Control Act and its effect. The imposition of controls on credit, like other attempts to govern the economy by regulation, has proved unsuccessful in the long-run. The Credit Control Act was no exception. It was an arbitrary move focusing attention on interest rates as a control device.

Your sixth question asks about "price rules," such as a gold standard. Although speculative, this solution should be carefully evaluated. But I would prefer -- to answer your last question -- greater fiscal restraint, with action by Congress to restructure entitlements; a systematic adherence to a monetary policy by the Fed that would gradually reduce interest rates; and the adoption of legislation to encourage employment, saving and capital investment.

Sincerely,

Robert F Dee

RFD:pjg

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August 20, 1982

The Honorable Roger W. Jepsen, U.S.S.
Vice Chairman
Joint Economic Committee
Washington, DC 20510

Dear Senator Jepsen:

My responses to your recent questions about monetary policy are enclosed.

Thank you for asking for my views.

Sincerely,

William G. Dewald

William G. Dewald
Professor of Economics
Editor, JMCB

WGD/rjw

Enclosure

Response to Senator Roger W. Jepsen's Questions

by

William G. Dewald
Ohio State University

August, 1982

1. What is "monetarism"?

Monetarism means different things to different people. It's a boo word that is attached to the Reagan Administration or the Thatcher Administration for having supported anti-inflationary monetary policies. It's a bravo word that identifies the much confirmed long run association between rates of monetary growth and inflation. But objectively monetarism is a set of propositions regarding the nature of the economy, the objective of noninflationary stable real growth, and the role of monetary policy in achieving that objective.

Proposition 1: The private economy is self stabilizing. Consequently real disturbances such as changes in demand or productivity engender automatic responses that tend to restore total output to a potential that efficiently utilizes available resources.

Proposition 2: Total demand growth in dollar terms is importantly influenced by monetary growth where money is defined as the medium of exchange (M1).

Proposition 3: Inflation is determined by the difference between growth in total demand and supply, and thus, given potential real growth, inflation is importantly accountable to monetary growth in excess of potential real growth.

Proposition 4: The Federal Reserve could control annual monetary growth within a narrow band by using required reserve ratios and open market operations to offset deviations in monetary growth from target that would otherwise occur.

Proposition 5: Inflation and economic instability are both attributable significantly to variations in demand growth and in turn to variations in monetary growth.

Policy Prescription: Monetary growth should be made more stable than it has been historically in order to prevent it from contributing to economic instability.

2. Are changes in the demand for money frequent enough, large enough, and sufficiently long lasting to vitiate the usefulness of "monetarist" monetary policy? What about changes in real output?

Changes in the demand for money interact with the supply of money in affecting the economy. Doubtless a persistent decrease in the demand for money as in a hyperinflation can contribute to inflationary pressures, essentially raising the velocity of money by raising total demand for goods relative to the available supply of money. Increases in the demand for currency in the early 1930s had precisely the opposite effect. In the post World War II period the demand for M1 money (currency and checking accounts in the hands of the public) has decreased relative to GNP at roughly a 3 percent annual rate, a trend rate that has been quite stable from year to year but not over shorter periods. Nevertheless, major changes in the supply of and not the demand for money have been associated with every major inflationary burst in the United States and with every business cycle expansion or contraction. Eliminating variations in M1 growth wouldn't eliminate economic instability according to monetarist propositions but by the historical record they would reduce it.

With respect to variations in potential real output growth, if, as in the 1970s because of demographic factors, oil cartels, and the like, real growth fell from about 4 percent to about 3 percent, anti-inflationary monetary growth would appropriately be reduced by 1 percentage point. But, even if it were not, the observed variation in real output growth has been small relative to variation in demand growth and thus has not contributed much to inflation, even for countries like Germany or Japan where in the 1970s potential real growth fell much more than in the United States.

Variations in monetary growth day to day, week to week, or month to month reflecting both money demand and supply shifts have not been found to have important effects on demand growth or inflation, but persisting trends to have lasting effects. The monetarist program for economic stability is to keep monetary growth stable and not allow it to swing wildly as money demand varies in response to vagaries of the business cycle and credit market conditions. Keeping monetary growth stable and thus long run sustainable inflation stable provides a firm foundation on which the complexities of the real production economy with its millions of individual prices and wages can be built.

3. Is it correct to say that the Federal Reserve has been following a "monetarist" policy since October 1979?

It has been monetarist in the sense that M1 growth has fallen on an annual rate basis from previous rates. But it has not been monetarist insofar as monetary growth was not held steady but rather became even more variable than before over periods as long as 6 months with wild swings not only in monetary growth but also, with a short lag, in interest rates too. It remains to be seen whether the Federal Reserve will hold monetary growth to a noninflationary rate as the economy expands in the coming quarters rather than allow an acceleration as it always has previously in such circumstances. That's the litmus test: Will the Federal Reserve keep monetary growth declining gradually toward a long run noninflationary rate during the forthcoming period of business expansion? Only time will tell whether the Federal Reserve is monetarist now.

4. Did implementation of the Credit Control Act in March 1980 interrupt the "monetarist" policy announced in October 1979? If so, how and for how long?

The Credit Control Act in March 1980 took an overheated economy and plunged it into ice water. It temporarily broke the natural links between credit flows and expenditure and in itself contributed to the 1980 recession. The fact that monetary growth also fell contributed too. Having cut monetary growth then, one wonders why the Federal Reserve didn't seize the opportunity to hold it down in keeping with a monetarist policy rather than allow it to rise and fall alternately which disoriented the economy despite the observed reduction in the overall rate of monetary growth.

5. If not, then what change actually occurred in October 1979. and how would you characterize Fed policy since that time?

What actually happened in October 1979 was that the Federal Reserve introduced a procedure that allowed market interest rates to rise sharply and to vary substantially not only transaction to transaction but over time. Short term variation in monetary growth was in fact not reduced despite it being announced as the objective of the new operating procedure. By setting a nonborrowed reserves target allegedly designed to achieve a particular monetary growth target but then supplying all the reserves banks needed to meet requirements based on their deposits two weeks earlier, the Federal Reserve in effect was targeting borrowed reserves: the difference between total reserves and nonborrowed reserves. Borrowed reserves are directly though imprecisely related to market interest rates, given the Federal Reserve discount rate and discounting administration. This procedure remains a far cry from a monetarist monetary control procedure which would have Federal Reserve instruments directed at controlling monetary growth through the monetary base (or total reserves) for a predicted value of the relationship between money and the base (or total reserves).

6. How do you feel about moving towards a "price rule" for monetary policy?

An appropriately defined "price rule" for monetary policy would be OK.

An appropriate price rule would have the Federal Reserve use its instruments to hold monetary growth quarterly or semiannually to a growth path that, based on the predicted relation to inflation, would stabilize inflation in the long run. That monetarist proposal would not have the Federal Reserve adjust its targets to every blip in the inflation rate, the demand for money, or real output. All it would insure is long run price stability. It would moderate but not eliminate the business cycle.

Inappropriate price rules include having the Federal Reserve use its instruments to control

- interest rates, since so doing would generally have it alternately contribute to inflation or deflation and thereby to the amplitude of business disturbances.
- the price of particular commodities such as gold, since by so doing disturbances with respect to the supply or demand for that commodity would be amplified in U.S. monetary growth and in turn in the real economy, inflation, and interest rates.

7. To what extent is monetary policy, as currently conducted by the Fed, responsible for high interest rates, as opposed to fiscal policy, and what policy changes, if any, should the Fed make today in order to reduce interest rates?

High real interest rates that persisted through mid-August 1982 were largely though not wholly accountable to Federal Reserve policies that contributed significantly both to the level of inflation and to uncertainties with respect to its future course. Prospective large government budget deficits were also a factor but mainly insofar as they represented a prospective pressure on the Federal Reserve to finance part of the deficit by issuing base money which in turn would feed monetary growth, nominal demand growth, and inflation--and thus also raise nominal interest rates. Uncertainties about future inflation were the major factor contributing to high real (inflation adjusted) interest rates through mid-August 1982. Even though the observed inflation rate was down to 5 or 6 percent, savers were protecting themselves from the risk of inflation rebounding to 9 or 10 percent by demanding and getting an inflation risk premium of 3 or 4 percent. The budget deficit itself contributed to real interest rates too, but only about 1 percentage point according to preliminary estimates I've recently made of the effect of the real (inflation adjusted) federal deficit on real interest rates.

For the period 1955-1981, the real rate on Aaa Corporate Bonds averaged 2.4 percent whereas the nominal rate averaged 6.4 percent. Expected inflation contributed 4.0 percentage points to the nominal rate. Real federal deficits contributed only 0.3 percentage points to the average real rate according to my estimates.

For 1980-1982, of course, expected inflation was much higher than average (by my estimates 8 or 9 percent) and the real budget deficit was much higher too (by my estimates from 1 to 2 percent of high employment real GNP), but even so the deficit accounted for only about 1 percentage point of the 6 percent real interest rate, leaving 3 to 4 percent of the real rate attributable to uncertainties with respect to future inflation and other factors.

What the Federal Reserve needs to do now is to hold to a noninflationary monetary growth rate such as it has (inadvertently ?) achieved in the period February-June 1982 (1.3 percent M1 growth at an annual rate). The historical record indicates that an M1 growth of 3-4 percent would be noninflationary. Having achieved this and more (perhaps at a cost of slow real growth the remainder of this year), to keep interest rates falling, the Federal Reserve needs to stay with a noninflationary monetary growth policy. If it did, my calculations show that Aaa Corporate Bond rates which averaged 14 to 15 percent in June would fall by 8 or 9 percentage points to 6 or 7 percent, and if people believed that noninflation policies would be pursued in the future, by an additional 3 or 4 percentage points, even taking into consideration the comparatively large real federal deficits that are projected in the near term future. That sounds like pie in the sky considering the high nominal and real rates of 1980-82. But it is in fact the down to earth reality of interest rates in the absence of high flying and uncertain inflation rates.

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DEPARTMENT OF ECONOMICS

September 24, 1982

Roger W. Jepsen, U.S.S.
Vice Chairman
Joint Economic Committee
Congress of the United States
Washington, DC 20510

Dear Senator Jepsen:

Enclosed are my answers to your questions on monetary policy in your letter of August 5, 1982. I appreciate very much the opportunity to respond to your searching questions.

Thank you very much.

Sincerely yours,

David I Fand

David I. Fand
Professor of Economics

DIF/kt
Enclosure

RESPONSES TO QUESTIONS ON MONETARY POLICY POSED BY SENATOR ROGER JEPSEN, VICE CHAIRMAN OF THE JOINT ECONOMIC COMMITTEE

David I. Fand
Wayne State University
Detroit, Michigan

1. What is Monetarism?

Monetarism is a doctrine which emphasizes the key role of changes in the growth of the money stock in economic stabilization. Money growth -- that is, the rate of growth of the money stock -- is viewed as one of the principle determinants of the level of economic activity. Changes in the money growth -- accelerations and decelerations in the money stock -- are viewed as playing a key role in bringing about changes in the level of economic activity and in the rate of economic growth.

2. Are changes in the demand for money frequent enough, large enough, and sufficiently long-lasting to vitiate the usefulness of "Monetarist" monetary policy? What about changes in real output?

Frequent, large, and long-lasting changes in the demand for money could certainly vitiate the usefulness of a Monetarist approach to monetary policy. A Monetarist approach seeks to stabilize the growth in the money stock, a policy that makes a lot of sense if, indeed, many of the disturbances are coming from the supply side; on the other hand, if there are many disturbances originating in the demand for money, stable growth in the money supply will not alleviate these fluctuations.

The Monetarist approach makes the most sense if, in fact, the demand for money is relatively stable. On the other hand, if money demand is erratic and we stabilize the growth in money stock, we will still end up with erratic behavior in interest rates.

I do not believe that the changes in the demand for money that do occur are frequent enough, large enough, or sufficiently long-lasting to vitiate a Monetarist approach to monetary policy. Similarly, I do not believe that autonomous changes in real output would vitiate the usefulness of a "Monetarist" monetary policy.

3. Is it correct to say that the Federal Reserve has been following a "Monetarist" policy since 1979?

My answer here would be yes with one qualification. The Fed has been following a Monetarist policy in the sense that it is placing far more emphasis on money growth and the monetary aggregates than on interest rates. In this sense, my answer is yes.

On the other hand, the Fed has introduced and permitted very considerable short-run fluctuations in money growth. Thus, while the Fed emphasizes the monetary aggregates, it has not yet succeeded in stabilizing the short run growth rates of these aggregates. As I see it, the Fed has been basically following a Monetarist policy except for the fact that it has permitted relatively volatile changes in the growth rates over short periods.

4. Did implementation of the Credit Control Act in March, 1980 interrupt the "Monetarist" policy announced in October, 1979? If so, how and for how long?

The implementation of the Credit Control Act in 1980 did interrupt the monetary policy in two ways. First, when it was initially imposed, we had a very sharp and severe cutback in credit, and for about three months we had a dramatic, sharp and severe curtailment in credit. Then, to offset the deflationary consequences of this severe curtailment in credit, the Federal Reserve permitted a very large and dramatic acceleration in monetary growth. Accordingly, for the three months when we had credit controls, there was a very sharp curtailment of credit, and after the controls were lifted we had for several months an excessively large acceleration in monetary growth. All in all, the interruption in Monetarist policy -- both the initial sharp curtailment in credit and the subsequent large increase -- lasted about nine months.

5. If not, what actually occurred in October, 1979 and how would you characterize Fed policy since that time?

As indicated in my response to Question 4, I think there was an interruption in Monetarist policy for a period of approximately nine months.

I would characterize the change that occurred in October, 1979 as an attempt by the Fed to focus on and emphasize the monetary aggregates. In the first year this decision to emphasize the monetary aggregates was offset by other policies such as the institution of credit controls in March, 1980.

The Fed has been learning in the past 2 1/2 years: At first, it enunciated a policy of emphasizing the monetary aggregates; in the period from March, 1980 to November, 1980, it moved a way from this emphasis on monetary aggregates; and since November, 1980 it has been moving more in the Monetarist direction. Although the Fed has permitted more short-run fluctuations in monetary growth than may be desirable, it has been doing a better job in hitting its monetary growth targets.

6. How do you feel about moving toward a "price rule" for monetary policy?

The idea of a "price rule" for monetary policy has great intuitive appeal, but I have serious reservations about its feasibility. To follow a "price rule" we would need an index, and the monetary authority would restrict money when the index rose and expand money when the index fell. The monetary authority would need a reliable price index which was accurate, comprehensive, representative, and readily available, and which gave a true picture of what was happening to prices throughout the economy. I am not sure there is any index that we now can construct that can satisfy all these properties. The more comprehensive the index, the more accurate the index, the longer the time before it is available.

If we use price indexes that are readily available, they are not truly representative of or indicative of what may be going on throughout the economy. Accordingly, while the idea of following a "price rule" and permitting changes in money to follow an index has appeal, I do not know of any index of a commodity, or group of commodities, that would give us this information.

There is a second difficulty in basing monetary policy on a "price rule." Because of the long and variable lags in monetary policy, an attempt to stabilize prices may very well lead to greater instability. The attempt by the monetary authority to counteract these disturbances may, given the long and variable lags in monetary actions, produce even greater disturbances than it was trying to correct.

To illustrate this, assume that the monetary authority is trying to stabilize the index at 100 and assume further that the index has risen to 102. The authority therefore will take restraining action. But if the lag between the action and its effects is, say, nine months, it could very well be that by the time this action would have its effect, the economy could be declining naturally and thus this action will merely bring about a greater decline, and we may end up with an index of 97. Accordingly, this would illustrate that the attempt to correct the index at 102 ends up in producing an index of 97, which is a greater disturbance than the initial one.

Many people believe that as desirable as the stable prices may be as a goal, it is not possible to base discretionary monetary policy on a "price rule," and the attempt to do so will merely bring about greater fluctuations in output and employment. Accordingly, they settle for a policy that will stabilize the growth rate in money because they believe this will maximize the contribution of monetary policy to stable prices.

7. To what extent is monetary policy, as currently conducted by the Fed, responsible for high interest rates, as opposed to fiscal policy and what changes, if any, should the Fed make today in order to reduce interest rates?

In my opinion, monetary policy has only a small role in the current high interest rates. I think the extraordinary changes in the economy are largely responsible for high interest rates. The attempt to build up our defense would, all things equal, cause interest rates -- especially long term rates -- to rise. The reallocation of resources toward defense, the relatively successful efforts to disinflate the economy, and our inability to cut government spending are key factors responsible for our high interest rates.

The short run variability in monetary growth is another factor which may cause interest rates to be somewhat higher than otherwise, and this is especially so for short term rates. I have not made any attempts to estimate how much of an influence that is, but I do not believe it to be a major one.

The shift in the implementation of monetary policy to an approach emphasizing aggregates from one emphasizing interest rates may also be causing higher short term interest rates. When the monetary authority stabilizes short term rates, it may lower rates in the short run at the price of permitting more inflation in the long run. On the other hand, when the monetary authority stabilizes monetary growth rates, it is in a better position to win the battle of inflation, but the transition to this policy may result in somewhat higher short term rates.

The high long term rates reflect, in large measure, real conditions having to do with the reallocation of resources in the economy and are, in this sense, relatively independent of what the Fed is doing. The high short term rates are also responsive to real conditions but may, to a much larger extent, also reflect (1) the variability of short run monetary growth rates and (2) the shift in operating procedures from an interest rate target to a monetary growth target.

September 4, 1982

MASSACHUSETTS INSTITUTE OF TECHNOLOGY

DEPARTMENT OF ECONOMICS

CAMBRIDGE, MASSACHUSETTS 02139

August 18, 1982

Senator Roger W. Jepsen
Joint Economic Committee
United States Congress
Washington, DC 20510

Dear Senator Jepsen:

Thank you for your letter of August 5, raising a number of specific questions about monetary policy. I will respond to the questions as numbered.

1. Monetarism is a doctrine that ascribes primary importance to the supply of money as determining the behavior of nominal GNP in the short run and the inflation rate in the long run.

2. Changes in the demand for money are frequent enough and large enough to make it undesirable that the quantity of money should grow at a constant rate. However, it is important to distinguish here between shifts in the demand for money, whereby a different quantity of money is demanded at given levels of interest rates and income, and a change in the quantity demanded. The Fed should respond to shifts in the demand function caused for instance by financial innovations. It should not respond in the same way to changes in the quantity of money demanded that result from an increase in the level of income or change in interest rates.

The Fed should accommodate shifts in money demand, but lean against the wind by reducing monetary growth when income is growing too rapidly, or increase the growth rate of money when the economy is in a recession.

3. More so than ever before, and more than is desirable.

4. It interrupted the constant growth rate of money policy for a while by causing a very steep recession that worried the Fed into increasing the growth rate of M1 for a few months.

5. Fed policy changed in 1979 to allow much greater fluctuations in interest rates. Monetary growth received greater, but not total emphasis, as a goal of policy. Fed policy has been extremely tight on average since that time, with substantial month to month variability of both interest rates and money growth. The month to month variations should not obscure the fact that the Fed has pursued for several years a policy that is designed to reduce the inflation rate, and that pays very little regard to unemployment.

6. It would be desirable for the Fed to move away from a policy of constant monetary growth. A price rule is not as desirable as a nominal GNP rule,

because the nominal GNP rule also includes countercyclical elements. For instance, a nominal GNP rule permits faster monetary growth at a time when both inflation and GNP growth are low.

7. The mix of monetary and fiscal policy is jointly responsible for high interest rates. The Fed could reduce interest rates now by making open market purchases. These would stand less chance of re-igniting inflation if fiscal policy became more restrictive.

Yours sincerely,

S. Fischer

Stanley Fischer
Professor of Economics

SF/cam

HOOVER INSTITUTION
ON WAR, REVOLUTION AND PEACE
Stanford, California 94305

August 16, 1982

The Hon. Roger W. Jepsen, Vice Chairman
Joint Economic Committee
Congress of the United States
Washington, D.C. 20510

Dear Senator Jepsen:

I appreciate your letter of August 5, 1982 and am pleased to comment on the questions you raise. I shall take them up in the order in which you list them.

1. "Monetarism" is defined in the enclosed column from Newsweek of July 12, 1982. Put very simply, as a matter of science it is the proposition that changes in the quantity of money have important influences in the short run on output and interest rates, and in the long run on prices. It includes the proposition that inflation is always and everywhere a monetary phenomenon produced by a more rapid rise in the quantity of money than in output. As a policy proposition, monetarism recommends a steady rate of growth in the quantity of money at a level consistent with a zero rate of inflation.

2. Changes in the demand for money are not frequent enough, are not large enough, and are not sufficiently long lasting to vitiate the usefulness of "monetarist" monetary policy. On the contrary, the talk about changes in the demand for money is simply a red herring introduced by the Federal Reserve to cover up mistakes in its policy. Every time it makes a mistake in policy and there is a resultant adverse influence on the economy, the Federal Reserve is ready to come forth with the charge that the demand for money has changed and that is what caused this bad result. Quite a number of those charges have been examined carefully by competent monetary economists. In each case it has turned out that there has been no change in the demand for money, but rather that the Federal Reserve has altered the situation by inappropriate changes in the quantity of money. With respect to changes in real output, most of the sharp ups and downs in real output have been the consequence of inappropriate changes in the rates of monetary growth. They are a result of bad monetary policy, not an explanation of why good monetary policy leads to bad results. I have discussed this also in my current Newsweek column, appearing in the Newsweek dated August 23, 1982.

3. The Federal Reserve policy since October 1979 has used monetarist rhetoric but the actual performance has not been monetarist. An absolutely essential feature of a monetarist policy is steadiness in the rate of monetary growth. Since October 1979, monetary growth has been more unstable than in any other comparable period that I know about in the whole history of the Federal Reserve System. If this be monetarism, I am not a monetarist.

4. The implementation of the Credit Control Act in March 1980 does deserve some of the blame for the sharpness of the decline in economic activity in early 1980 and its termination deserves some of the credit for the subsequent sharp up-

turn, but in the main, that down and that up reflected the corresponding changes in the quantity of money as is documented in my current Newsweek column. In any event, the effect of the application of the Credit Control Act and of its termination was certainly dissipated before the end of 1980.

5. The change that actually occurred in October 1979 was that the Federal Reserve changed the details of its operating procedures. Its objective of seeking to control total reserves rather than interest rates was an excellent one but the actual changes it made were inadequate to achieve its objective. The chief mistake it made was not to introduce contemporaneous reserve requirements simultaneously with the other changes in policy. It made the further mistake linked to this one of not introducing a discount rate linked to a market rate.

6. A price rule for monetary policy is a bad rule although a good objective. It is a bad rule because changes in the quantity of money tend to affect prices after a considerable delay. The historical record suggests that it is roughly two years before an increase in the rate of monetary growth is fully manifested in prices. As a result, a price rule for monetary policy would produce a monetary policy that was always fighting the last war.

7. Monetary policy, as currently conducted by the Fed, is primarily responsible for high interest rates. It is responsible for high interest rates because the fluctuations in monetary growth have introduced instability in the economy which in turn has tended to lead to a steady stream of distress borrowing by business enterprises keeping the interest rate higher than it would otherwise be. It is my judgment that if the Federal Reserve had followed the kind of monetary policy it promised to follow when it made the changes in October 1979, that is, a steady rate of growth of the quantity of money along a gently declining path, short-term and long-term interest rates today would both be something like 3 to 5 percentage points below where they are.

The changes that the Federal Reserve should make today in order to reduce interest rates are: (1) to implement immediately its recent decision to substitute contemporaneous reserves for lagged reserves instead of postponing the actual implementation to next year; (2) simultaneously announcing that hereafter the discount rate will be automatically linked to a market rate such as the rate on 90-day Treasury bills; (3) announce in advance the open-market operations which it plans to undertake in a series of succeeding weeks so as to let the market know what is going to happen. There are other detailed changes in procedure which I and other monetarists have spelled out which I would also like to see occur, but these are the most important elements.

My answers to these questions in large part duplicate the contents of my current Newsweek column to which I refer you.

Sincerely yours,

Milton Friedman

Milton Friedman
Senior Research Fellow

F:v
Enc.

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Economic Research Office

HARRIS
BANK

August 12, 1982

Senator Roger W. Jepsen
Vice Chairman
Joint Economic Committee
Washington, DC 20510

Dear Senator Jepsen:

Thank you for your letter of August 5 regarding various aspects of Federal Reserve policy. My answers to your questions are as follows:

1. Monetarism is the view that the sharp swings in the money supply represent a major element influencing business cycles. The key implication of monetarism is that monetary policy should consist of slow, steady increases in the money supply so as to minimize the ups and downs of business cycles.

2. I believe that the demand for money is relatively stable and therefore, monetary policy does have an important predictable impact on swings in the economy. While there has been a lot of conflicting evidence presented on this issue, I am attaching a chart showing six-month swings in money and six-month swings in personal income as well as a recent summary by the Federal Reserve Bank of St. Louis both of which strongly support the contention that the demand for money is stable.

3. It is not correct to state that the Federal Reserve has been following a policy of monetarism policy since October 1979. As the above mentioned chart indicates, monetary policy since October 1979 has been characterized by extreme swings and can not in any sense be considered stable.

4. Implementation of credit controls in March 1980 appeared to have a temporary effect on the economy. However, as the above mentioned chart shows, the effect appears to be minimal once six-month moving averages of economic data are considered.

5. Fed policy since October 1979 has been more volatile than before. As a result I would argue that monetary policy since that time has become anti-monetarist and clearly more oriented toward some other school of thought.

6. I favor moving toward a price rule for money as noted in my testimony before your committee on July 22.

7. I believe monetary policy is the primary cause of today's high interest rates with fiscal policy having a minimal effect. In order to reduce interest rates in a constructive and permanent manner, I favor adopting a type of price rule for money which is discussed in my testimony of July 22.

Sincerely,

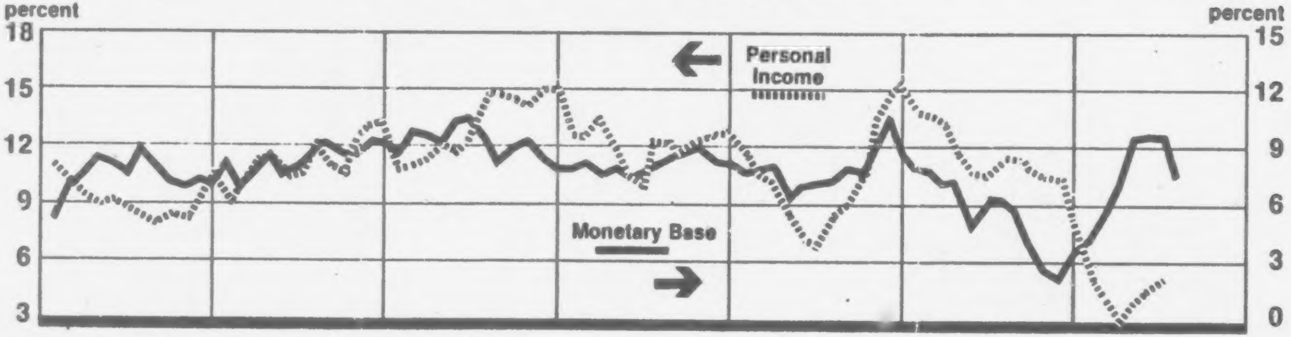
Robert J. Genetski

Robert J. Genetski
Vice President and Economist

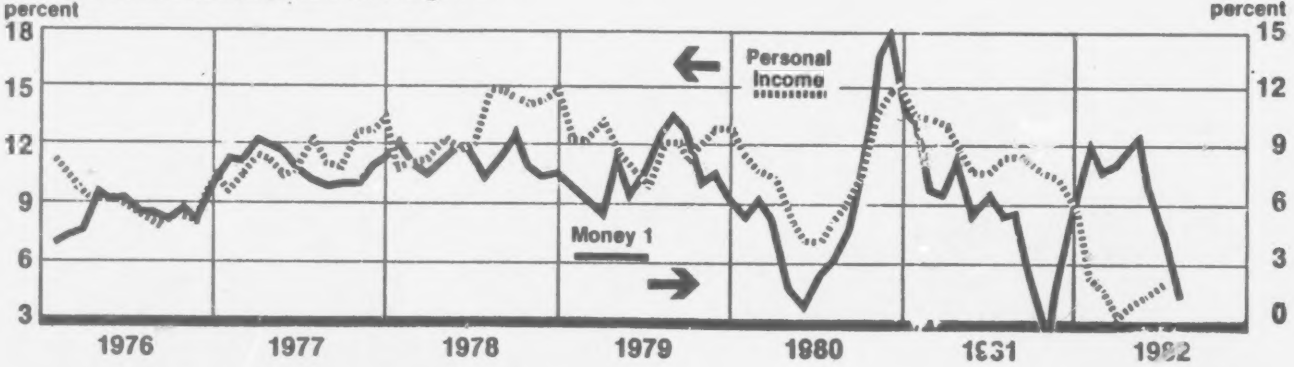
NLW

Enclosure

Personal Income and Adjusted Monetary Base



Personal Income and Money 1(1)



(1) Currency and all checkable deposits at depository institutions.
All data are seasonally adjusted six month compound annual rates of change.
Source: Board of Governors of the Federal Reserve System;
Federal Reserve Bank of St. Louis; Harris Bank

HARRIS BANK

U.S. FINANCIAL DATA

Week ending: July 28, 1982

Money growth has been relatively slow for about the past 2-1/2 years. From November 1979 to June 1982, the money supply grew at a 6.1 percent rate, compared with a 7.8 percent rate for the previous 2-1/2 years. Money growth has been highly variable, however, with cycles of rapid and sluggish money growth, as shown in the table below.

When periods of rapid or slow money growth are sustained for periods of six months or more, they are usually accompanied by marked accelerations and decelerations in aggregate spending, although the timing of this relationship varies. This relationship can be illustrated by comparing the periods of rapid and slow money growth with growth rates of nominal GNP. Money grew very fast from May 1980 to April 1981, with only a two-month period of essentially no money growth. This rapid money growth was accompanied by an increase in aggregate spending from the second quarter of 1980 to the third quarter of 1981, after a decline during the previous quarter. This period of rapid growth was followed by a six-month period of no money growth from April to October 1981 and by a significant slowing in the growth of nominal GNP from the third quarter of 1981 to the first quarter of 1982. Money growth then accelerated from October 1981 to April 1982, and the growth of nominal GNP accelerated somewhat in the second quarter of this year.

Growth Rates of M1 and Nominal GNP
(compounded annual rates, seasonally adjusted)

Period 1/	M1	Period 2/	Nominal GNP
11/1979 - 5/1980	1.1 %	I/1980 - II/1980	-0.4 %
5/1980 - 4/1981	12.5	II/1980 - III/1981	12.5
4/1981 - 10/1981	-0.2	III/1981 - I/1982	1.0
10/1981 - 4/1982	9.2	I/1982 - II/1982	7.1
4/1982 - 6/1982	-1.3		

1/ Monthly averages of daily figures

2/ Quarterly data

Prepared by Federal Reserve Bank of St. Louis
Released: July 30, 1982

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New York, N.Y.
10022

Arthur E. Gandolfi, Jr.
Vice President

August 12, 1982

Roger W. Jepsen, U.S.S.
Vice Chairman, Joint Economic Committee
Congress of the United States
Washington, D.C. 20510

Dear Senator Jepsen:

Leif Olsen asked me to respond to the questions contained in your letter of August 5, 1982.

Question 1. The current school of thought, sometimes disparagingly termed monetarism, arose in reaction to the previously dominant Keynesian theory. What some of us may have forgotten, is that Keynesian economics is not the natural order of events. It also originated in an intellectual revolt against a previous orthodoxy, an orthodoxy called the quantity theory, which had been the dominant "macro-economic theory" from the days of David Hume and Adam Smith to that of Keynes. In essence, monetarism is just an updated version of this older tradition. The basic tenets of "monetarism" are:

a. Money demand is stable and its interest elasticity is relatively low in the short run.

b. Because of this there is a close relationship between changes in money and changes in nominal income.

c. If the changes in money supply are unexpected by the public, the change in nominal income will occur, in the short-run, mostly in real output and not in price.

d. The real economy is inherently stable, and apart from sudden deviations in money growth, it will tend to a natural or equilibrium unemployment rate.

e. Therefore, in the long run, changes in aggregate demand (nominal income) will be fully reflected — not in permanent changes in real output — but in changes in prices.

f. Interest rates are a poor gauge of monetary policy. High rates of interest, due to the Fisher Effect, are almost universally associated with high inflation and therefore with rapid, not slow, money growth.

g. The best way to stabilize the economy is to stabilize money growth.

Question 2. While changes in the demand for money do occur and do cause problems for monetary policy, these changes are not large enough to vitiate the usefulness of "monetarist" monetary policy. For instance, the year to year changes in the velocity of M1 show remarkable stability over the last thirty years. The alternative to controlling money supply directly is to peg interest rates, the price of gold, or some other commodity. The question is how stable is the demand for money relative to the stability of the demand and supply of these commodities. If, the underlying trend growth rate in M1 velocity, which has been between 3 to 4 percent in recent years, should slow percipitously because of disinflation, current Fed targets may prove to be too low.

Question 3. Prior to 1979 the Fed basically followed a policy of pegging interest rates within a very narrow band. If the rate they chose was below the equilibrium rate, money growth accelerated, followed eventually by a similar acceleration in inflation. After a long delay the Fed would over respond to these adverse developments by raising the Federal funds rate and precipitating a recession. In October 1979 the Fed announced a change in its operating procedures. They announced they would target money growth and allow the funds rate to fluctuate within a wider band. There have been episodes over the last 3 years in which they have allowed the funds rate to move substantially but, in general, they have still operated by targeting the funds rate. The Fed attempts to estimate what funds rate will produce the targeted growth in money and then change that rate to compensate for any over- or under-shooting of monetary growth. The major difference between the pre-and-post October 1979 operating procedures comes down to a more serious attempt to hit their targets and a greater willingness to adjust the funds rate as necessary. Given the existence of lagged reserve accounting this is about the only way they could operate. Since the current procedure still leads to substantial volatility in money growth, even over periods as long as a year, this policy is not what monetarists have recommended.

Question 4. Credit controls, by causing tremendous shifts in the demand and supply of bank credit, caused the Fed to be overally restrictive in the spring of 1980 and too expansionist in the second half of that year. The volatility in money growth caused by credit controls lasted into 1981.

Question 5. See the answer to question 3.

Question 6. A commodity price rule would put U.S. money supply at the mercy of shifts in world demand and supply for the commodity chosen. Under the classical gold standard, the short-run volatility in money, prices, and output was much higher than it has been in either the managed dollar exchange standard of the immediate postwar period or of the current flexible exchange rate environment.

Targeting the overall price level could work. The only problem is that the lag between money and prices is so uncertain and variable that it would produce violent movements in money and real activity if the Fed were intent on hitting their target in the short-run. If the price rule was stipulated as a long-run target, the Fed would need some formula for gradually adjusting money to the performance of inflation. Such a gradualist policy could, if properly administered, restore confidence in monetary policy without producing needless volatility in the economy.

Question 7. No one has a good explanation for the recent high levels of nominal and real interest rates. The slowdown in money growth that has occurred on average over the last three years can at best explain a small fraction of this phenomenon. In fact, during those periods in which money growth has accelerated, rates have risen not declined. The very volatility in money growth, by increasing uncertainty about the future course of monetary policy and inflation, may be partially responsible for the failure of rates to decline. The best course for the Fed to follow is to make the necessary changes in operating procedures (i.e., contemperaneous reserve accounting), to stabilize money growth, and to keep to its announced targets.

Sincerely,

Arthur E. Gandolfi

AEG:ka

ROHM AND HAAS COMPANY
PHILADELPHIA

August 13th, 1982.

The Honorable Roger W. Jepsen,
Vice-Chairman - Joint Economic Committee,
U.S. Senate,
Washington, D.C. 20510

Dear Roger,

Your letter of August 5th took me back many, many years to the time when I was studying economics at Princeton. The questions sounded like the mid-term exam in Economics 101!

Seriously, I have decided to address the basic issues behind the questions rather than to give you the literal definitions which were requested. I hope some of the following will be of help to you and your Committee.

Interest rates today are extremely high in an absolute sense for the U S.A. and especially in relation to the level of inflation. The high interest rates are caused by the huge federal budget deficits and lack of confidence of the financial and business communities that the Congress has the will to pass sound fiscal legislation. The scene in Washington today - especially in the House of Representatives - is so ridiculous that it would be funny except for the disastrous consequences of what is taking place. "Politics as usual" is a frightening situation when one considers the serious state of the U.S. and world economies. The Senate has made serious efforts and is still trying to enact sound fiscal legislation which will reduce the huge projected budget deficits. This has been only partly successful because of the political situation taking place in the House.

The only real bright spot on the scene is the Federal Reserve and their policy of controlling the money supply in the face of these huge budget deficits. Obviously, this must result in high interest rates - but these are not due to any "fault" in Federal Reserve policy but rather to the budget deficits resulting from action, or lack of action, by the Congress. Any efforts to bring down interest rates without reducing the huge budget deficits must result in runaway inflation and economic disaster for the U.S. and world economies.

I think your Joint Economic Committee would be on much firmer ground if they considered the basic realities of the above paragraph rather than look for theoretical definitions as requested in your letter of August 5th.

Best regards,

Vince

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August 31, 1982

The Honorable Roger W. Jepsen
Vice Chairman
Joint Economic Committee
Congress of the United States
Washington, D. C. 20510

Dear Senator Jepsen:

Thank you for your letter of August 5th concerning monetarism, quantity theory, Federal Reserve policy, etc.

It is true that monetarism is based on the quantity theory of money. In a broad sense the quantity theory is one of the best established generalizations in economics. There has never been a significant inflation, a rise in the price level of, say, 4 percent or more for longer than, say, two years without a significant rise in the quantity of money.

Exceptions are thinkable. If for example because of a war (or as in former times a series of crop failures) output fell sharply, with a constand quantity of money prices would rise sharply. But this has never happened in modern times. True, wartime inflations have been aggravated by a decline in output, but by far the largest part of the price rise was caused by monetary expansion.

It follows that an ongoing inflation cannot be brought down without a reduction in monetary growth. It stands to reason, however, that with inflationary expectations entrenched as they are after 15 years of continuous high inflation, and money wages and many prices as rigid as they are, disinflation through monetary restraint will cause transitional unemployment. In other words, a recession is the unavoidable byproduct of disinflation. Squeezing out inflation from the economy is like curing a drug addict: withdrawal of dope is a painful experience.

I now turn to the questions formulated in your letter.

1. Monetarism in the strict sense can be defined as the theory that the necessary and sufficient condition to curb inflation is to reduce gradually and steadily monetary growth to the level compatible with price stability and keep it at that level after price stability has been achieved.

There are, however, different versions of monetarism. The Fed's version is not the strict one just mentioned. The Fed has always stressed that monetary restraint is a necessary but not a sufficient condition. For optimal results monetary restraint should be supported by a tight budget policy and the Fed has also recognized that circumstances change so that the target range for monetary growth has to be changed from time to time.

This brings me to questions 2 and 3.

2. Monetarists, including the Fed, realize that "demand for money" is subject to change; in other words, that the velocity of money changes. These changes complicate monetary policy, but they are not large or frequent enough to vitiate the usefulness of the "monetarist approach," unless the latter is interpreted in an overly strict sense. See the next question.

3. The Fed can be said to have followed a monetarist policy since October 1979, but in a pragmatic, not in the doctrinaire sense of sticking to a single target for monetary growth through thick and thin. The Fed has a target range not a target point, and the target range is changed from time to time if circumstances change. Moreover, the Fed has always realized and stressed that for optimal results monetary policy requires the help of fiscal policy and possibly of other policy instruments.

4. The implementation of the Credit Control Act in March 1980 was a highly disturbing factor. The credit controls that were imposed were a dismal failure. Detailed credit controls, as compared with control of money supply, are a messy, inefficient, distorting policy — a bureaucratic nightmare which had to be abandonded after a short while. Preston Martin, Vice Chairman of the Federal Reserve Board, in a recent appearance before a Congressional committee set the record straight. (See the report in the Wall Street Journal of August 10, 1982.)

5. As already mentioned, the policy of the Fed since October 1979 can be described as consistently monetarist in a pragmatic, not an overly rigid sense — to wit to slowly reduce the rate of monetary growth in order to slowly squeeze inflation from the economy. In my opinion this was the right thing to do and has been on the whole successful. To repeat, a recession was the unavoidable side effect of the process of disinflation.

It is possible to quible whether the speed of disinflation was a little too fast — or too slow -- or whether it could have been done more smoothly. But such criticisms are a counsel of perfection and should not be allowed to blur perception of the broad fact — that disinflation was overdue and could not be painless.

6. The proposal that a "price rule" should be substituted for the quantity of money rule, in other words that the Fed should "target the

price level" and not monetary growth, rests on a complete misunderstanding of monetary policy. The central bank directly controls central bank money (the monetary base) and through it indirectly determines the growth of broad monetary aggregates. But it cannot "target the price level." Price level stability is the goal of monetary policy, but it is not a magnitude that can be targeted in the sense in which a monetary aggregate can be targeted.

Your letter asks whether there exists a "proxy for the price level such as gold" whose price could be fixed. The answer is emphatically "no." Under the gold standard the price of gold in terms of dollars would be "stable" (fixed). Some would argue that if the gold standard could be restored by international agreement, the world price level would become tolerably stable. But this is questionable and irrelevant, because it is out of the question to reach an international agreement on the restoration of the gold standard. No country, with the possible exception of South Africa or Russia (the two largest gold producers), would join the United States. Obviously the United States cannot go it alone. It is simply amateurish to believe that it is possible to substitute a "price rule," in the form of a "gold rule" or in any other form, for the quantity of money rule as the basic principle of monetary policy.

7. The principal cause of high interest rates was the large budget deficits. Large public sector borrowing drives up interest rates and crowds out private production investment.

True, the Fed could temporarily reduce interest rates by easier money. But the consequence would be a reacceleration of inflation? Despite high unemployment and idle capacity, inflation would pick up speed again quickly, because inflationary expectations have been sensitized by the experience of 15 years of high inflation. If inflation were allowed to speed up again, after a short respite we would be in a more serious situation than we are now and the unavoidable pains of disinflation would become worse.

It would be irresponsible to squander the great progress that has already been made in curbing inflation by an impatient policy of monetary expansion. It would be foolish to give up the fight half a mile before the finish.

There remains a big question which is not raised in your letter. Is it not possible to reduce the pains of disinflation without reaccelerating inflation? The answer is: In principle it is possible, but it is very difficult; it involves structural reforms that would make the economy more competitive. But such reforms take a long time to be put in place and to become effective.

The numerous advocates of incomes policy have a point, but the instruments that they propose are totally unacceptable. Direct wage and price controls would spell the destruction of the market economy and the milder forms of incomes policy, wage and price guideposts and tax-oriented incomes policy (TIP), would at best be ineffective and a bureaucratic nightmare.

I have discussed these problems at some length in my paper and its postscript "Inflation and Incomes Policy" of which I enclose a copy. The paper was written over a year ago and published in German translation by the Swiss Federation of Industry and Commerce. The postscript was written early this year.

Let me only mention two cases where faulty measures or monopoly power have created huge unemployment.

Minimum wages are largely responsible for the shockingly high unemployment among teenagers, especially black ones. These young people are thus deprived of early on-the-job training which is vitally important for their future careers. Minimum wage laws should be abolished, but Congress has even rejected the modest proposal to reduce the minimum wage for teenagers.

The other example is offered by the automobile and steel industries. Those industries are in deep trouble and unemployment is shockingly high. But in both industries wages are 60-70 percent higher than the average wage in U.S. manufacturing industries. Unions have priced out of jobs a large fraction of their members. And the government bails them out by restricting competition from abroad.

By refusing to impose import restrictions and by lifting existing ones, it would be possible to curb monopoly power of business and labor unions and to promote healthy competition in a large area of the economy.

This would be the right kind of "incomes policy." For details and other examples, see my paper "Inflation and Incomes Policy" which I mentioned earlier in this letter and which is enclosed.

Sincerely yours,

Gottfried Haberler

Enclosure

Federal Reserve Bank of Kansas City

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1982 AUG 26 AM 9 40

August 23, 1982

Honorable Roger W. Jepsen
Vice Chairman
Joint Economic Committee
United States Senate
Washington, D.C. 20510

Dear Senator Jepsen:

Here are my responses to the questions posed in your letter of August 5, 1982.

1. What is "monetarism"?

While I do not consider myself an expert on defining monetarism, I do have some view on what monetarism is. I think the essence of monetarism is the assumption that the private economy is inherently stable and tends toward the set of prices and quantities consistent with a Pareto optimal allocation of resources. Given this basic assumption, the policy issue has both a short-run and a long-run dimension.

a. In the long run, the only effect of money is on prices, nominal interest rates, and exchange rates. There are no effects on real variables. Choosing the long-run behavior of the money supply, i.e., its average growth rate, is synonomous with choosing the long-run rate of inflation and level of nominal interest rates. Once the desired average growth rate of the money supply has been attained, the task of policy is to reduce the short-run deviations of money growth from its average value.

b. In the short run, the task of monetary policy is twofold. First, the deviation in the growth rate of the money supply must be reduced. I believe that it can be demonstrated that no one is made better off by monetary surprises except to the extent that someone else is made worse off. That is, monetary surprises are not Pareto optimal. Second, once the growth rate of the money supply has been stabilized, it must be moved to its desired long-run value gradually and in a well-announced manner.

2. Are changes in the demand for money frequent enough, large enough, and sufficiently long lasting to vitiate the usefulness of "monetarist" monetary policy? What about changes in real output?

   Since economists have been debating this issue forever, I think it is fair to say that we do not know the answer. However, that is not to say we do not have opinions. I think there are two issues here, one theoretical and one statistical.

   a. At the theoretical level, the issues of stable money supply growth and unstable money demand are separate. Based on the assumption that money demand reflects private economic decisions about optimal portfolio composition, changes in money demand are due to attempts by households and firms to rebalance portfolios in view of changing economic conditions. This rebalancing should be neither abetted nor frustrated by monetary policy. If the rebalancing results in fluctuations in prices, output, interest rates, and exchange rates, these fluctuations represent natural consequences of whatever the change was in economic conditions which led to the change in money demand. A key point to remember here is that money demand is endogenous to the economy. It is just one aspect of portfolio management, albeit an important one.

   b. At the statistical level, the issue is whether the time series behavior of velocity is independent of the time series behavior of the money supply. I think the evidence shows that they are independent. Velocity is essentially a random walk. This is because velocity depends on interest rates which are a random walk. Given that velocity is a random walk, there is little or nothing that policy can do to anticipate future movements in money demand or to offset past movements in it without unpredictable future consequences. What then should policy do? Be stable so as to not increase the variation in aggregate demand.

3. Is it correct to say that the Federal Reserve has been following a "monetarist" policy since October 1979?

   No. A monetarist policy has two characteristics. First, it has small deviations around its average growth rate. Second, its average growth rate is consistent with price stability. Monetary policy since October 1979 has had far too much variation to be considered a monetarist policy.

4. Did implementation of the Credit Control Act in March 1980 interrupt the "monetarist" policy announced in October 1979. If so, how and for how long?

   I do not have sufficient knowledge of this particular event to offer an opinion.

5. If not, then what change actually occurred in October 1979, and how would you characterize Fed policy since that time?

   I think the changes that occurred are first, that the target growth band for the money supply was lowered, and second, that the Fed quit letting the band float when they missed their target. I think the Fed attempted to move more toward control of monetary aggregates but did not have operating procedures consistent with such control. As a result, short-run variation in the money supply increased.

6. How do you feel about moving towards a "price rule" for monetary policy?

   Absolutely not!

   Prices have two important characteristics. First, they are endogenous to the economy. That is, they reflect peoples' attempts to allocate resources efficiently. Second, they provide signals to people which aid them in their resource allocation. Neither of these should be distorted. Especially the latter. Even if the private economy is inherently stable, that does not mean that prices and quantities do not change. Preferences for consuming now versus later as well as opportunities for doing so change over time. These result in changes in economic activity. There is nothing wrong with these changes. Even more, there is something good about them. The good thing is that in a free market economy they are associated with people moving to more preferred allocations. Why should every change in aggregate demand and aggregate supply be offset? The economy is not Disneyland. It cannot be controlled. The thing to do is to reduce the fluctuations to those due to fluctuations in private activity rather than add to them and confuse private decision making with policy actions.

7. To what extent is monetary policy, as currently conducted by the Fed, responsible for high interest rates, as opposed to fiscal policy, and what policy changes, if any, should the Fed make today in order to reduce interest rates?

My answer uses the basic assumption that the Fisher effect holds in that nominal (observed) interest rate is approximately equal to (i) the expected real rate of interest, plus (ii) the expected rate of inflation, plus (iii) a premium for risk.

(i) The expected real rate of interest has been quite high in 1982 but since receipt of your letter has fallen drastically, just as monetarist theory predicted. The explanation runs as follows. Inflation follows money with an approximate two-year lag. If the growth rate of the money supply is reduced, the real stock of money is also reduced since prices are still rising due to previous money growth. The unexpected fall in the real stock of money causes real interest rates to rise temporarily. Once the surprise is over, the real interest rate declines as economic activity and the rate of inflation slows. The slowing in economic activity reduces the demand for money just as the slowing of price increases the real stock of money. The real rate of interest returns to its pre-monetary policy change value. I believe that the fall in interest rates which has been observed in August 1982 is a reflection of people adjusting to a lower growth rate of the money supply.

With respect to fiscal policy, I have been unable to uncover any empirical association between the deficit and interest rates. Why there is no association remains a puzzle.

(ii) The expected rate of inflation should be falling in response to the lower average growth rate of the money supply. As it falls, nominal interest rates will fall. It is, I believe, quite clear that the deficit has no effect on inflation.

(iii) The risk premium in interest rates depends on variation in the level of interest rates. Since October 1979 this variation has increased substantially. Thus it follows that the risk premium has increased although I do not know the numerical magnitude. If money growth steadies, then interest rates will be less variable and the risk premium will fall.

In short, I think that monetary policy is responsible for

i. fluctuations in the expected real rate of interest,
ii. fluctuations in the inflation premium,
iii. fluctuations in the risk premium.

Thus, my answer is yes, I think monetary policy is largely responsible for the behavior of interest rates.

What should the Fed do? Reduce unanticipated movements in the money supply. Keep the money supply within its target band. Quit making it so hard for market participants to plan for real investment and saving decisions.

Thank you for your solicitation of my opinion. I hope my views are clearly stated.

Yours truly,

Alan C. Hess

Alan C. Hess
Visiting Scholar

ACH:bw

THE UNIVERSITY OF NEW MEXICO
ALBUQUERQUE, NEW MEXICO 87131

August 27, 1982

Senator Roger W. Jepsen
Vice Chairman
Joint Economic Committee
United States Senate
Washington, DC 20510

Dear Senator Jepsen:

I am pleased to have the opportunity to present my views on the issues raised in your letter of August 5, 1982. There is considerable misunderstanding of the policy prescription that could appropriately be labeled "Monetarism". It is extremely important that the popular misconceptions be corrected, and that our central bank be protected from well-intentioned, but mis-guided, pressures to take actions that would result in re-accelerating inflation or a severe depression.

My responses to each of the questions posed in your letter are as follows:

1. "Monetarism": essestially, this word is used as a label for the body of theory which strongly suggests that the rate of inflation is a function of the rate of money creation. Substantial evidence has been accumulated to support the view that the Federal Reserve has adequate powers to achieve a relatively steady and predictable rate of growth of the monetary base and the narrowly defined money supply. If they were to do so, the observed rate of inflation, and people's expectations about future inflation, would be closely related to such monetary growth. In turn, the level of market interest rates would reflect the expected future rate of inflation plus the real rate of return on productive capital.

2. "Changes in the demand for money": frequently there have been assertions that changes in the public's desire to hold cash balances in the form of currency or transactiuns deposits in banks have offset or undermined the effects of monetary policy actions, or have provided a justification for exceptionally rapid or slow growth of the money supply. However, intensive studies of each of such periods have revealed that after a period of two to four quarters such apparent "shifts in the demand for money" have been reversed or "averaged out". Consequently, the rate of increase of nominal income (GNP) over a period of a year or so has consistently reflected the rate of money growth after somewhat of a lag.

THE ROBERT O. ANDERSON SCHOOL AND
GRADUATE SCHOOL OF MANAGEMENT

Sharp accelerations and decelerations of money growth are not accompanied by a simultaneous sharp acceleration or deceleration of GNP growth; therefore, in any single quarter the ratio of GNP to money (velocity) fluctuates inversely with fluctuations in that quarter's money growth. But this reflects nothing more than the fact that there are lags in the relationship between money growth and economic activity. Since the rate of inflation generally reflects money growth over a period of two years or more, short-run fluctuations in money growth are reflected in similar short-run fluctuations in the growth of real output.

3. "Monetarism and October 1979": it would not be correct to say that the Federal Reserve has successfully purused a "monetarist" policy since October 1979. Federal Reserve officials have stated a long-run objective of slowing the growth of monetary aggregates in order to reduce inflation, which is consistent with a monetarist prescription. However, short-run volatility of money growth has actually increased since October 1979, which is contrary to a monetarist policy. As a result, the uncertainty about future money growth, and therefore, future inflation, has actually increased. The level of market interest rates has reflected this increased uncertainty. A steadier and more predictable rate of monetary growth would have produced lower market interest rates, which is one of the objectives of a successful anti-inflationary monetary policy.

4. "Credit controls from March to July 1980": the implementation and subsequent removal of credit controls in 1980 caused changes in the actual implementation of monetary policy. Market interest rates came under sharp downward pressure soon after the controls were imposed. Real economic activity, and, therefore, effective credit demands collapsed as a result of the controls. The Federal Reserve was not willing to see market interest rates drop as drastically as market forces seemed to imply during the first few weeks of the controls, so they provided fewer (drained more) reserves from the banking system in order to moderate the rate of decline of interest rates. In addition, the public appears to have decided to hold a larger share of their money balances in the form of currency as a result of the limitations imposed on the use of credit cards. These developments resulted in an absolute contraction of the money supply at a time when real economic activity was declining. When the controls were suddenly removed, credit demands immediately increased as economic activity revived. The resulting upward pressure on interest rates was viewed as undesirable because of the recession and rising unemployment. Central bank actions in the summer and autumn of 1980 resulted in extremely rapid growth of bank reserves and the money supply as interest rates rose to the hightest levels in modern history. Such developments were clearly contrary to a monetarist policy.

5. Since October 1979, Federal Reserve actions have continued to be influenced by concerns over short-run pressures on market interest rates. Volatility of monetary growth has been greater than previously, in part because of such developments as the use of credit controls in 1980.

6. "A price rule for monetary policy": achievement of stability in the average level of prices of goods and services should be the primary objective of monetary policy. However, it is sometimes asserted that policy actions to stabilize the dollar price of a specific commodity such as gold would help to achieve greater stability in the dollar prices of other goods and services. Unfortunately, the evidence bearing on this issue is mixed. Uncertainty about the predictability of world supplies of new gold, the industrial and other non-monetary uses of gold, and the speculative motives for holding gold in a world of political torment, have caused the rate of exchange between gold and currencies to be more volatile than the rate of exchange between major currencies and goods and services. Introduction of some type of "price-rule" or price objective may add to the credibility of long-run monetary policies, but there is no substitute for achieving and maintaining a steadier rate of money creation.

7. "Monetary policy and interest rates": high market interest rates are not an indication of a "tight" monetary policy. On the contrary, high nominal interest rates generally reflect the fact that monetary growth has been rapid in the past and inflation and expectations about future inflation are correspondingly high. Furthermore, high volatility of monetary growth in the short-run creates uncertainty about most likely future monetary policy developments. Such uncertainty is reflected in a "risk premium" that is built into nominal interest rates.

   A slower average growth of the money supply would reduce the inflation premium in market interest rates. A steadier and more predictable growth of the money supply would reduce the risk premium in market interest rates. Achieving and maintaining low intereset rates is a primary objective of a monetarist policy.

I appreciate the effort you are making to increase general understanding of these issues, and I hope my responses are of some use.

Sincerely,

Jerry L Jordan

Jerry L. Jordan

JLJ/sw

(0975B)

LOYOLA UNIVERSITY OF CHICAGO

GEORGE G. KAUFMAN
JOHN F. SMITH, JR. PROFESSOR
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August 11, 1982

Senator Roger W. Jepsen
Vice Chairman
Joint Economic Committee
Congress of the United States
Washington, DC 20510

Dear Senator Jepsen:

This is in response to your letter of August 5 requesting my comments on a number of propositions concerning monetary policy.

1. What is "monetarism"?

Although all monetarists are not of the same thought and differ on a wide range of issues, I believe that they all accept four basic principles:
a) changes in the nominal money supply will result in later, almost proportional changes in the same direction in the price level and, eventually, in nominal income;
b) the demand function for a specific definition of money can be summarized in a small number of variables and, although not constant, is reasonably stable and predictable;
c) the Federal Reserve can and should control the money supply;
d) the private sector of the economy is basically stable and does not frequently require active contra-cyclical economic policy.

2. Are changes in the demand for money frequent enough, large enough, and sufficiently long lasting to vitiate the usefulness of "monetarist" monetary policy? What about changes in real output?

There is no evidence that changes in the demand for money are frequent enough, large enough, nor sufficiently long lasting to decrease the usefulness of "monetarist" monetary policy. With the possible exception of the 1974-75 period, there is no empirical evidence that even the major innovations in the financial sector that have occurred in recent years have shifted the demand for money sufficiently to seriously hamper monetary control of the economy. These conclusions have been reached on the basis of thorough empirical investigations both inside and outside the Federal Reserve System. For example, see the articles in the May/June 1982 Economic Review of the Federal Reserve Bank of Richmond and the February 1982 Review of the Federal Reserve Bank of St. Louis. Even if large and structural shifts in the demand for money did occur, the major impact in recent years would have been through innovations that reduce the demand for money and thus should lower interest rates for a given growth rate in money supply. Moreover, judging from the much faster growth in money supply than real output over recent years, it appears unlikely that insufficient monetary growth in response to growth in real output is responsible for high interest rates.

3. Is it correct to say that the Federal Reserve has been following a "monetarist" policy since October 1979?

No. Monetarists believe in relatively steady rates of monetary expansion, at least from quarter to quarter if not from month to month. In addition, monetarists believe in focusing on only one definition of money supply. Although M1 has slowed in recent years, this is not true of M2 or M3, and the intrayear movements in M1 were more volatile after October 1979 than before.

4. Did implementation of the Credit Control Act in March 1980 interrupt the "monetarist" policy announced in October 1979? If so, how and for how long?

No. As argued in response to question 3, there has not been a true monetarist policy before or after March 1980.

5. If not, then what change actually occurred in October 1979, and how would you characterize Fed policy since that time?

The October 1979 change appears to have been a well-intentioned change to place greater emphasis on monetary aggregates in order to send a strong signal to the market that the Fed was finally taking a stronger stance against inflation. Previous Fed anti-inflationary pronouncements were not followed by supporting actions, and the Fed's credibility had worn thin. The difficulties of gaining greater control over the money supply under a regime of lagged reserve accounting were apparently not fully appreciated at the time, and efficient procedures for controlling money in such an environment have never been adopted. The procedures currently used are inefficient and make it very difficult to achieve the announced monetary targets. As a result, the October 1979 change has resulted primarily in increased confusion among the public, the government, and even the Federal Reserve, but little actual change in monetary conduct.

6. How do you feel about moving towards a "price rule" for monetary policy?

Although I can understand the motivation for a price rule, it would be difficult to devise an effective price guide in today's complex economy. The same ultimate objectives may be achieved more efficiently through other means, such as a monetary growth rule.

7. To what extent is monetary policy, as currently conducted by the Fed, responsible for high interest rates, as opposed to fiscal policy, and what policy changes, if any, should the Fed make today in order to reduce interest rates?

I believe that the current high interest rates are attributable to a number of factors, including a general lack of credibility in the Federal Reserve and federal government in maintaining the current reduced rates of inflation. The public has been burned once too often at severe costs. Bonds used to be relatively riskless "fixed-income" securities. Recently, they have been almost as price volatile and thus as risky as stocks. Losses on these "safe" investments have not only been large but unexpected and experienced by those who did not think they were assuming much risk. Thus, investors are anxious, and rightfully so. Most surveys indicate that, contrary to actual rates of inflation in recent months, the public still views inflation in double digits. This is not overly surprising as it took the public a long time to upgrade its inflationary expectations sufficiently high to correspond to the actual rapid rates of inflation in the late 1970s. Thus, it may reasonably be expected to respond equally slowly on the downside. In addition, the unusual volatility in money supply has bred confusion and reinforced the anxiety among market participants. Interest rates will come down significantly for any length of time primarily after the Federal Reserve has achieved a more stable and longer lasting slower growth in money. The recently announced intention by the Fed to change to a more contemporaneous reserve accounting system in 1983 should give it a more efficient control over monetary growth, if it wishes to do so. The major question, however, is one of will, not of means.

Current fiscal policy is more of a psychological than economic contributor to current high interest rates. A smaller deficit achieved through tax increases should reduce interest rates by reducing both national income and the need to channel funds from the private to the public sector through the financial capital market. But, because of the reduced aggregate demand, these lower rates should not stimulate physical capital spending but may reduce the strains on those financial and nonfinancial firms that are burdened by high interest costs from their borrowing activities at higher interest rates. A smaller deficit through reduced government spending should also reduce interest rates but with likely smaller adverse effects on aggregate income in today's environment.

I hope that I have been responsive to your questions. I enclose a recent paper in which I address a number of these concerns in greater detail.

Sincerely,

George Kaufman

George G. Kaufman

GGK:bm

Enclosure

The University of Western Ontario

Office of the Chairman
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London, Canada
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September 1, 1982

Roger W. Jepsen, U.S.S
Vice Chairman
Joint Economic Committee
Congress of the United States
Washington, D.C. 20510

Dear Senator Jepsen:

Your letter of August 5th was waiting for me when I returned from vacation. Since this is the beginning of term, I thought that a quick and rather brief reply to it would be more useful to you than a longer response which I might not be able to get off until sometime in October. Fortunately it is only about eighteen months since I completed a lengthy paper on "Monetarism" which deals with many of the points that you raise. I enclose an offprint of it in the hope that you might find it helpful. With that in mind let me quickly go down your list of questions.

1. I have nothing really to add to what I have said in my paper.

2. No, I do not think that shifts in the demand for money are frequent or large enough to vitiate the usefulness of gearing monetary policy to medium term growth rate targets for some appropriate monetary aggregate. Two kinds of instability need to be thought about here however. First, institutional change in the banking system undoubtedly causes the demand for money function to shift over time. This seems to me to be a sufficient reason for rejecting proposals to enshrine "monetarist" policy prescriptions in constitutional amendments and such. On the other hand there is considerable short run variability in measured demand for money functions. That seems to me to make monetary policy unsuitable for fine tuning the economy. Moreover much of this instability, I believe, is produced by the econometric techniques which we use in attempts to estimate demand for money functions. We almost always use the supply of money to measure the demand for it. This is alright so long as it is safe to assume that the supply and demand for money are equal, but I believe that this is an invalid assumption over short periods such as a quarter, and may even be invalid, when monetary policy is particularly erratic, over periods as long as a year.
   You raise the question of real output changes. I would put the matter this way. So long as there is a stable demand for money function over

/continued page 2

the medium term, one would expect changes in the supply of money to cause changes in prices, output, and interest rates. We can be reasonably confident I believe that over periods like four or five years, the bulk of the relevant changes will come out in the price level. However over shorter periods there is no doubt that the possibility of interest rate and output changes makes it almost impossible to predict the immediate impact of monetary policy on the price level. This, to me, is another reason in favour of setting medium term targets for monetary growth and not worrying too much about trying to fine tune prices or real output with monetary growth. I think the dynamics of the interaction of the relevant variables over periods shorter than about five years are too ill understood for us to be able to carry out fine tuning with monetary policy.

3. The Federal Reserve has been targeting monetary growth since October 1979, and has succeeded in reducing the long run average rate of growth of the relevant monetary aggregates. However there has been a lot of short term variability in monetary growth rates, and that is hardly a characteristic of "monetarist" policies.

4. & 5. I do not feel suitably qualified to comment on these questions in a useful way. I am not sufficiently familiar with the day by day operations of U.S. financial markets over the relevant period.

6. I presume that by a "price rule" you mean attempting to stabilize the price level by manipulating the money supply. I would argue that medium term monetary growth targets are the best feasible way we have of achieving price level targets at the moment. If we had more knowledge of the dynamics of the macroeconomy, and if we could be confident that the very growth of that knowledge would not itself affect the structure of the economy, which it probably would, then perhaps we might be able to do better by attempting to fine tune the price level. However I do not believe that that is a practical proposition at the moment.

7. I believe that the main reason for high nominal interest rates is high inflation expectations. The only way that the Fed can have a permanent downward effect on the level of nominal interest rates is to continue to pursue an anti-inflation policy. As that policy influences the price level's behaviour over time, so also interest rates will fall. That being said, inflation is not the only influence on interest rates. Other things equal, the larger is the federal deficit, the higher one would expect interest rates to be. This effect arises for two reasons. First, federal borrowing puts extra pressure on capital markets and some private borrowing has to be "crowded out" to make room for federal borrowing. I do not believe that this has to be a hundred percent effect to be important. Second, when federal deficits are high there

must always be a worry that they will be funded by money creation at some time in the future. This effect keeps inflation expectations high, regardless of the current behaviour of the actual inflation rate, and is in my view probably the more important channel whereby fiscal policy is keeping interest rates high at the moment.

I hope you find this very brief letter and the enclosed paper of some help. If I can be of further assistance to you please do not hesitate to get in touch with me.

Yours sincerely,

David Laidler
Chairman

/thc
enclosure

THE UNIVERSITY OF NORTH CAROLINA
AT
CHAPEL HILL

School of Business Administration

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August 13, 1982

Senator Roger W. Jepson
Vice Chairman
Joint Economic Committee
Congress of the U.S.
Washington, DC 20510

Dear Senator Jepson:

I would like to take the last sentence in the opening paragraph of your letter of August 5 as my principal theme. It reads "Therefore, recent changes in the demand for money and in real output which have not been accommodated by faster money growth are responsible for high interest rates". I agree fully except that I would omit the word "recent". Over the post-war years velocity has trended upward steadily and this trend has been accompanied by higher interest rates. The attached note published in the fall of 1981 reflects my position on this development. Please consider it a part of my reply to your letter.

I agree with commentators referred to in the second paragraph of your letter who have argued that the Federal Reserve's policy is essentially "monetarist" and that this "monetarist" policy is largely responsible for high interest rates. However, I disagree completely with tying the money supply with a price level target (whether gold, or a sensitive commodity index, or other proxy) at the present time. On the contrary this would freeze in the present high monetary velocity and high interest rates. It is impossible for me to believe that rates can fall much as long as velocity remains at present levels.

The long-term linear relationship between proportionate cash balances (k) and capitalization factors leads to a number of conclusions about monetary policy:

(1) The stability of the parameters and the high explanatory power suggest that M1 still is a valid measure of the amount of money used in meeting transaction requirements(See also Robert Weinstraub's letter to WSJ Oct. 14, 1981).

(2) The high explanatory power of K alone especially when lagged residuals are included ($R^2 = .99$) suggests that other factors have had only secondary influence on long-term interest rates over the years.

(3) To stablize and reduce long-term interest rates it probably will be necessary to increase M1 not only to supply adequate funds for future growth but also to bring velocity down enough to be compatable with lower interest rates. This reduction in V might well call for an increase of 50% or more in M1. Under present depressed conditions even an increase of this magnitude might not lead to inflation--the extra money might only reduce the enormous supply of money substitutes now available--but it is entirely possible that some form of credit and price control or incentives might be necessary in the transition period.

(4) The possibility of a stable growth path with full employment is much greater when long-term interest rates center around 4%, which is not far from the long term real growth rate of the economy. Rates were around this level for the first 60 years of this century. Experience teaches us that such nominal rates are consistent with deflation as well as inflation.

(5) The long-run relationship between V and r generally is recognized but usually is stated as $V = f(r)$ rather than $r = f(V)$. For example, see page 20 of the Joint Committee report on the impact of deficits on inflation (July 30, 1981) where the long run response of V to r is estimated to be on the order of only .2. Of course if r and V are highly correlated this implies a 5 for 1 relation between r and V if r is stated as a function of V and obviously suggests that interest rates are highly sensitive to velocity.

Answers to your particular questions:

Question 1:

Answers to questions 1 and 2 in your letter possibly can be shown best by use of the old equation of exchange

$$MV = PT$$

The original quantity theorists (monetarists) assumed that V, the turnover of money, was approximately constant and that T, representing real income was exogenous so that changes in M would work themselves out directly by changes in prices. The newer version of the theory is that the steady growth in V over the post-war years has been an institutional development. With either version V has little explanatory power for other economic variables such as real or nominal interest rates. Changes in M are crucial in influencing

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changes in PT and hence M alone is the crucial policy variable in the monetarist view.

Question 2:

To control PT it is necessary to control MV and not M alone. The monetarists disregard the importance of interest rates on the opportunity cost of holding cash balances and hence, do not recognize that V can be controlled and stabilized only through interest rates. M alone is not sufficient to control either P alone or PT.

Question 3:

The Federal Reserve has been following a "monetarist" policy since October, 1979.

Question 4:

I have not been able to separate out the effects of the Credit Control Act in March, 1980, either on policy or on results.

Question 5:

Since Oct. 1979, Interest Rates have been even more a "loose cannon".

Question 6:

Monetary policy involves both money and interest rates. Price stabilization with full employment is certainly a desirable objective.

Question 7:

The Fed's present policy has been a disaster. It should immediately lower interest rates by increasing M1.

Sincerely,

Henry A. Latané

Henry A. Latané
Willis Professor of Investment
Banking (Emeritus)
UNC-CH

THE PENNSYLVANIA STATE UNIVERSITY
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College of the Liberal Arts
Department of Economics

August 26, 1982

The Honorable Roger W. Jepsen
United States Senate
Vice Chairman, Joint Economic Committee
Congress of the United States
Washington, D.C. 20510

Dear Senator Jepsen:

I have enclosed responses to the questions contained in your letter of August 5, 1982. I hope my thoughts are helpful and I shall look forward to the JEC report on these issues.

Sincerely,

Raymond E. Lombra
Professor of Economics

/dh
Enclosure

1. As Karl Brunner (University of Rochester) and Thomas Mayer (University of California-Davis) have written, monetarism encompasses four basic propositions: (1) adherence to the quantity theory of money in the sense than an increase in the money stock (or the monetary base), for example, is expected to raise prices (and nominal income), and thus reduce the value of money; (2) the specification of a transmission mechanism linking policy variables and the ultimate policy objectives (inflation, unemployment, and real growth) which emphasizes the wide range of substitution relations linking relevant variables, the role of expectations (and shocks) in determining the relationship between both real and nominal interest rates and inflation and unemployment, and the stability of functions explaining the demand for money and the supply of money; (3) belief in the inherent stability of the private sector; and (4) belief in a smooth functioning, efficient capital market (domestically and globally) which renders various pieces of sectoral (allocative) detail relatively unimportant (compared to the quantity of money) in determining movements in nominal income.

It is important to emphasize, as David Laidler has said, "Monetarism is not some rigid orthodoxy but rather an ongoing, expanding, and above all pragmatic body of doctrine." Moreover, the policy recommendations advanced by monetarists, generally calling for low, smooth growth paths for the money stock, do not emanate from any strong belief that they have a corner on the truth. Quite to the contrary, such recommendations are viewed as a stabilizing force given the pervasive uncertainty surrounding our knowledge of the relevant linkages and the poor performance of policymakers over the past 10-20 years.

2. There is some evidence that changes in the trend growth rates of real output and velocity, the latter being related to shifts in the demand for money, occurred during the 1970's. Neither development vitiates the usefullness of monetarist policy recommendations. What is required is an adjustment (downward in the case of a rise in velocity and a drop in output trends) in the rate of monetary growth deemed to be consistent with noninflationary economic growth.
3. My perception of what the Fed has been doing since October 1979 is described fully in the attached article from the American Banker.
4. I believe the credit controls program was a major error. Its implementation and subsequent removal generated gyrations in the economy and the monetary aggregates which were neither anticipated nor well handled. More specifically, the reacceleration of monetary growth in the last half of 1980, which was clearly excessive, helped to sow the seeds of the most recent downturn in economic activity.
5. In addition to the comments in the American Banker article, I would only say that Fed policy thus far in 1982 has been constructive. By this I mean that the rate of monetary growth is sufficient for a moderate, sustainable recovery which does not rekindle inflation.
6. This is a complex subject. I am not persuaded that the types of price rules proposed would in and of themselves lead to a significant improvement. However, getting the Fed to specify a nominal GNP objective does deserve some careful thought.
7. As I said in my testimony before the JEC on June 10, 1982, I believe the Fed has been following a path which is consistent with interest rates

moving lower over time. Considerable improvement was, of course, experienced over the summer. More recently, the evidence of increased fiscal disipline which has surfaced has helped to sustain the downward movement in rates. Taking these developments into account and remembering past experience, suggestions about raising money growth further should be strongly rejected; whatever temporary relief was fostered would be more than swamped by the untoward effects of the resulting erosion of the Fed's hard won creditability.

THE UNIVERSITY OF MICHIGAN
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Paul W. McCracken
Edmund Ezra Day University Professor
of Business Administration

August 12, 1982

Senator Roger W. Jepsen
Vice Chairman
Joint Economic Committee
Congress of the United States
Washington, D.C. 20510

Dear Roger:

This is in response to your letter of August 5 posing some propositions for comment. My brief comments in order would be along the following lines.

1. I interpret "monetarism" to be placing primary emphasis on changes in the money supply as the factor determining the level of economic activity in nominal terms. There is a tendency for monetarists to prefer smaller increases in public spending than others, but I do not see that as inherent in monetarism.

2. To suggest that changes in the demand for money are sufficiently important "to vitiate the usefulness" of monetarist policies would be to overstate the case. I do think we have learned that money matters, and probably matters a great deal, but there are many other things which economic theory and students of public policy must take into account.

3. My short answer would be in the affirmative. At the same time it would not be fair to say that the Federal Reserve excludes all other considerations from their policy decisions.

4. Yes--and the implementation of that unfortunate act also produced an enormous displacement effect in the economy. Unquestionably it was the major cause of that recessionette in 1980.

5. See above.

6. I am skeptical of any single simple rule. Obviously what is happening to the price level should be taken into account.

7. Monetary policy as currently conducted probably has had very little to do with high interest rates. What the Federal Reserve is haunted by, and for that matter the whole economy, is a long legacy of increasingly inflationary monetary policy particularly during the latter half of the 1970s. It would be unrealistic to assume that financial markets and people generally will in a few months be believers about any proffered changes in a path for monetary policy that has been established over a period of years.

Regards,

Paul W. McCracken

PWM:dj

UNIVERSITY OF WASHINGTON
SEATTLE, WASHINGTON 98195

August 12, 1982

Department of Economics
DK-30

The Honorable Roger W. Jepsen
Vice Chairman
Joint Economic Committee
Congress of the United States
Washington, D. C. 20510

Dear Senator Jepsen:

Thank you for your letter of August 5, 1982. I am pleased to comment on the propositions listed there.

Question #1: What is monetarism?

A. Monetarism suggests that persistent inflation is largely a monetary phenomenon. Therefore, its primary implication for policy is to prescribe a rate of money growth approximately equal to the long-run rate of growth of real output. Given a stable time path of velocity, this prescription will produce stable prices. Monetarism strictly rules out nominal interest rates and the rate of unemployment as viable targets for monetary policy. Persistent attempts to lower nominal interest rates or to lower the rate of unemployment by increasing the growth of money will, in the monetarist view, lead to ever-accelerating inflation.

Question #2: Do changes in money demand or real output vitiate the usefulness of monetarists' monetary policy?

A. Here the important distinction is between predictable and unpredictable changes in money demand and real output. Monetarist doctrine explicitly recommends allowing money growth proportionate to predictable real output growth. Unsystematic changes in money demand or in real output should, under the monetarist view, not be accommodated, since before the fact, they are very difficult to predict. More particularly, if a random positive shock to money demand or a random increase of real output above its long-run trend level causes an increase in the nominal interest rate, the monetarist view suggests that such changes should not be accommodated. The basic reason is that before the fact there is no way to tell whether such disturbances are permanent or temporary. Non-monetarists would argue that the interest rate changes inherent in such shocks cause sizeable enough disturbances to economic activity, that they should be offset.

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Question #3: Is it correct to say that the Federal Reserve has been following a monetarist policy since October, 1979?

A. The monetarist prescription in the pre-October, 1979, period was to lower and stabilize money growth rates. The idea was that this would lower and stabilize inflationary expectations and thereby lower and stabilize nominal interest rates. It was recognized that during the transition to a new policy regime some increased volatility of interest rates could be expected. It is well known that since October, 1979, the volatility of both interest rates and money growth has increased considerably, although the largest movements in money growth rates occurred during the second and third quarters of 1980 in the wake of the brief experience with credit controls.

Monetarists typically recommend targeting the growth of an aggregate, such as M_1, or the monetary base. Since October of 1979, the Fed's stated policy has been to target non-borrowed reserves while tolerating a broader range for the Federal Fund's rate. Many have argued that this procedure, in conjunction with lagged reserve accounting and the absence of a penalty discount rate, has contributed considerably to the enhanced volatility of money growth. Such critics would argue that these features of the Federal Reserve's new operating procedures are responsible for much of the volatility of money growth rates. They would argue, further, that the Fed has not gone far enough fully to implement monetarists' prescriptions to stabilize money growth. The resulting high level of volatility of money growth rates, with many attendant "surprises" in the path of the money supply have, it is argued, contributed to enhanced volatility of interest rates. These views are detailed in my enclosed article, "What Has Gone Wrong?" that appeared in The American Banker in the Fall of 1980.

Question #4: Did implementation of The Credit Control Act in March, 1980, interrupt the monetarist policy announced in October of 1979?

A. There is considerable evidence to suggest that imposition of The Credit Control Act in March, 1980, resulted in a very sharp drop below target of money growth rates during the second quarter of 1980. The subsequent lifting of the credit controls during June of 1980 resulted in a sharp acceleration of money growth above targeted rates during the third quarter of 1980. (See again, "What Has Gone Wrong?")

Question #5: What change (in monetary policy) actually occurred in October, 1979, and how would you characterize Fed policy since that time?

A. As noted above, the Federal Reserve moved to a policy of targeting non-borrowed reserves while tolerating considerably wider ranges for the Federal Funds rate. That policy, with the difficulties described above, has been largely adhered to. Some would argue that there have been brief episodes, perhaps such as that late in 1981 and early in 1982, when the Fed appeared to be attaching somewhat more weight to an interest rate target.

Question #6: How do you feel about moving toward a price rule for monetary policy?

A. Holding money growth approximately equal to the rate of growth of real output with allowances for any trend in velocity constitutes a "price rule" for monetary policy. I do believe that such a rule is the most appropriate one for monetary policy if "price rule" means that maintaining stable and predictable prices is the primary objective of monetary policy.

Question #7: To what extent is monetary policy as currently conducted by the Fed responsible for high interest rates as opposed to fiscal policy?

A. Studies which I have conducted suggest that historically high real interest rates during 1981 resulted from a combination of unexpectedly slow money growth, falling inflationary expectations and, to some extent, to a structural change in the cyclical pattern of fiscal budgetary deficits attributable to the sequence of tax cuts embodied in The Economic Recovery Act of 1981. Given the long period of accommodative monetary policy by the Federal Reserve prior to 1980, it was almost inevitable that actual follow-through on a serious program of inflation control by lowering and maintaining reduced money growth rates would produce transitional increases in expected real interest rates. This proved to be the case. Further, these effects occur promptly while negative impact upon nominal rates of reduced inflationary expectations occurs more gradually as the Fed gains credibility regarding its determination to slow inflation. Regarding fiscal policy, typically the financial markets can anticipate a drop in federal budgetary deficits as the economy recovers and private sector credit demands rise. However, a schedule of annual reductions in personal tax rates through 1984 and subsequent indexing raises the possibility that this pattern will be broken and replaced by a situation where federal budgetary deficits may rise during a recovery. The expected collision of private and public borrowing demands results in an expectation of historically high real interest rates.

There is very little the Fed can do beyond what it is doing to reduce interest rates, save for an improvement in operating procedures which would, perhaps, result in somewhat less volatility of interest rates. Reductions in interest rates below levels prevalent now in August of 1982 will come from two sources. First, a broadening conviction of the Fed's determination to keep money growth at a level consistent with low and stable inflation. Second, and this event is by no means certain, a resolution of the uncertainty regarding a change in the traditional cyclical pattern of Federal budgetary deficits.

Over all, I think it unfortunate that the initiative to control inflation has, since the Summer of 1981, been burdened with considerable uncertainty surrounding an experiment in fiscal policy. My concerns on this question are further detailed in The American Banker article, "Control Money Before Cutting Taxes."

Should you wish further elaboration on any of the points I have raised here, I would be happy to comply. I should note that after September 1, 1982, I will be taking sabbatical leave in Washington, D. C. While there I can be reached through the Fiscal Affairs Department at the International Monetary Fund, or at home at 5041 Cathedral Ave., N. W., Washington, D. C., 20016, telephone 686-6922.

Sincerely,

John H. Makin
Professor of Economics and
Research Associate,
National Bureau of Economic Research

Enclosures

UNIVERSITY OF CALIFORNIA, DAVIS

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DEPARTMENT OF ECONOMICS DAVIS, CALIFORNIA 95616

August 27, 1982

Senator Roger W. Jepsen
Vice Chairman
Joint Economic Committee
U.S. Congress
Room G 133
Dirkson Senate Office Bldg.
Washington, D.C. 20510

Dear Senator Jepsen:

Thank you for your letter of August 5. Enclosed are replies to the questions you raised.

With best wishes,

Sincerely,

Thomas Mayer

Thomas Mayer
Professor of Economics

TM/kf

Enclosure

REPLY TO QUESTIONS

Thomas Mayer, University of California, Davis

1. What is Monetarism?

A basic attitute that underlies monetarism and differentiates it from most Keynesian thinking is that if focuses on the long run. Typically, when confronted by some macroeconomic problem, Keynesians will advocate a policy that will work in the short run, though they admit that in the long run it will be ineffective, or have unfavorable effects. By contrast, monetarists tend to pay little attention to the current problem and advocate policies that become eventually beneficial. Not surprisingly, Keynesian economists tend to think that the short run lasts a relatively long time, while monetarists tend to think that the long run arrives fairly quickly.

Another difference between the two schools relates to their political suppositions. Keynesians tend to think that the political process can readily be controlled, so that policies that require considerable sophistication and restraint by policymakers can be successful. Monetarists, on the other hand, doubt this because they are worried about political pressures on the policymakers, as well as about bureaucratic inefficiences, and about the limited amount that economists know about the way the economy functions. Monetarists accuse Keynesians of assuming that decisions on monetary and fiscal policy are made by a philosopher-king. This political difference is connected with the previous point about the short run and the long run. A Keynesian can advocate the adoption of expansionary policies in a recession, while believing that these policies would be harmful if they are not terminated once the economy reaches high employment. Since it is obvious that these policies should then be terminated they *will* be terminated. Since monetarists are less sanguine about this, they oppose the adoption of such policies that would be harmful if maintained in the long run.

On a more specific level monetarism may be distinguished by twelve characteristics, six relating to policy, three to theory, and three to research method. The policy ones are:

1. use of the money stock or the monetary base, rather than interest rates as a target for Fed policy, and a belief that the Fed can control the money stock adequately;
2. use of the base or total reserves, instead of unborrowed reserves or the federal funds rates as an instrument to reach the desired money growth rate:
3. Acceptance of a long run growth rate rule for money, that is having the money stock grow at a fixed rate (or as close to a fixed rate as can be achieved) regardless of circumstances. Not all monetarists want to go this far, but all would want at least relatively stable money growth;
4. rejection of an attempt to trade off more inflation for less unemployment; most monetarists believe that inflation does little, if anything, to reduce unemployment except possibly in the short run:
5. Relatively more concern about the evils of inflation than about the evils of unemployment. This does not mean that monetarists are unconcerned about unemployment; to a considerable extent it just reflects their great concern about inflation:
6. In general, monetarists are more opposed to government intervention than is true of the majority of economists or of the general public.

With regard to economic theory, monetarists:

1. accept the quantity theory of money, that is the propositions that (a) changes in the quantity of money bring about proportional changes in nominal income, and (b) observed changes in nominal income are due predominately to changes in the money growth rate;
2. describe a process by which money affects income that places relatively little emphasis on nominal interest rates. Monetarists differ among themselves about the specifics of the transmission process.

3. Monetarists believe that the private sector is relatively stable. While, in the absence of government intervention, there would still be some fluctuations in employment and prices, these fluctuations would be milder than the ones we experience now when the government does intervene. In this way monetarists differ sharply from Keynesians.

Monetarists differ from Keynesians in their method in the following three ways:

(1) They analyze aggregate demand as a total unit rather than as the sum of demands in various sectors of the economy. Since aggregate demand is obviously both a total unit and the sum of demands in various sectors, this disagreement between monetarists and Keynesians is not a difference about facts or theory, but about the most convenient research strategy.

(2) Similarly, monetarists look at the price level as a single unit, rather than as an aggregate of individual prices. This is too, a matter of research strategy, but it does relate to differing assumptions about the downward flexibility of prices. Monetarists think of prices as being more flexible than Keynesians do.

(3) Monetarists prefer to use small models that relate nominal income directly to the money supply rather than the large econometric models favored by Keynesians.

These twelve monetarist propositions are all interrelated, though one can accept some while rejecting the others. A number of other economists and I have discussed these monetarist characteristics in greater detail on The Structure of Monetarism (New York, W. W. Norton, 1978)

2. Are Changes in the Demand for Money Frequent and Large Enough to Vitate the Usefulness of Monetarism?

Most studies relating money holdings to income and certain other variables have shown a less stable relationship for recent years than for previous years. Although some have found a stable relationship for recent years too, it is too early to tell whether these studies have discovered a genuinely stable relation or have just been lucky. But suppose that the relation between money and income has actually become less stable. Does this mean that it is too unstable to serve as the basis for policy? Since Fed must do something, the question is not so much whether the money-income relationship is stable or not, but whether it is less stable than the relation between interest rates and income.[1] Those who point to the instability of the money-income relationship have only looked at half the question. Deciding whether the money-income or the interest rate-income relation is stabler is extremely difficult, in part because it is tied up with another issue, the measurement problem. It is quite possible that the seeming instability of the money-income relation reflects in good part merely the difficulty of measuring money in an era of money market funds, consumer repos etc. At the same time, the observed before-tax nominal rate of interest is hardly a good measure of the more relevant after-tax real interest rate.

But even suppose that the interest-income relation were stabler than the money-income relation, and that the interest rate could be measured better than the money stock. Despite this the money stock might still be a better target for Fed policy than the interest rate. This becomes plausible if one drops the assumption, underlying most discussions of monetary policy, that the Fed is extremely efficient. Once one allows for inefficiencies and bureaucratic biases a whole range of additional considerations becomes relevant. In a forthcoming paper I have tried to see which target is more likely to lead to three errors, (a) inertia in changing the target setting when it needs changing, (b) money market myopia and (c) confusion between real and nominal magnitudes.[2] I also investigated whether, given these three biases, the damage that is done by using an interest rate target when a money stock target is appropriate is greater or less than the damage done in the converse case. On these tests the money stock performs much better than the interest rate. Hence, despite any recent shifts in the relation of money to income, I believe that the money stock is still a better target than is the interest rate.

3. Has the Fed been monetarist since October 1979?

The Fed's policy has been more monetarist since October 1979, since it is now willing to allow interest rates to fluctuate much more than before, and thus can concentrate better on its money stock target. But at the same time it has used unborrowed reserves as its instrument of policy, in a way that may well be inconsistent with monetarism. The main question is what happens when the demand for money increases. If the Fed accomodates this by allowing the supply of money to rise it is operating contrary to monetarist doctrine and is acting as a potential engine of inflation. To the extent that the Fed allows banks to obtain more reserves by borrowing from it and does not offset this increased borrowing it is doing just that. The question, therefore is to what extent the Fed does offset borrowing.[3] This is hard to say. The Fed does estimate borrowing in deciding what volme of unborrowed reserves to supply. But, at least in 1980 it continually underestimated the upswings in borrowing, so that total (borrowed plus nonborrowed) reserves would rise as banks borrowed more. In one way it is easy to sympathize with the Fed's accomodation of borrowing since increased borrowing -in the very short run- will frequently be a manifestation merely of an increased demand for reserve due to some technical factors, such as a shift of deposits to banks with higher reserve requirements, rather than a manifestation of an inflationary increase in aggregate demand. Since the Fed does not know which it is, it has to make a guess, and run the risk of either not accommodating when it should, or accommodating when it shouldn't. What is disturbing from both a monetarist and a Keynesian viewpoint is that the Fed seems (or at least seemed in the past) to have favored accomodation. I suspect, though this is no more than a suspicion, that this is due to myopia. The Fed is very close to the money market and sees the losses in terms of financial inefficiencies that occur when it does not accomodate a merely technical rise in the demand for reserves, so that interest rates rise unnecessarily. The longer-run effect of accomodating when it should not, i.e. increased inflation, is not so apparent to it.

4. What was Effect of the Credit Control Act?

I have not studied this episode and cannot answer this question.

5. What Change has occured since October 1979?

The biggest change is that the Fed has shifted its emphasis away from the microeconomics of the financial system to macroeconomics. It is not correct to characterize the "October revolution" as a shift from using an interest rate target as a stabilization tool to a money growth target. Although the Fed prior to October 1979 did talk about using the interest rate as the intermediate target of its stabilization policy this is not what it actually did. To use an interest rate target as a stabilization tool the interest rate must be allowed to change. Suppose the Fed wants income to remain constant, but spending incentives rise. To moderate the rise in income it must then allow interest rates to rise. But prior to October 1979 the Fed was greatly concerned with stabilizing interest rates; hence when spending incentives rose it would try to keep interest rates stable, thus allowing nominal income to rise. Similarly, in a recession when demand for goods and services fell, so that the interest rate fell too, the Fed would limit the fall in interest rates by reducing the growth rate of the money stock. The Fed now does pay much more attention to stabilizing income instead of stabilizing interest rates.

But on the other hand if the Fed were really concerned about controlling the money growth rate it would have responded to the large fluctuations in money growth that we have experienced by adopting some of the reforms advocated by monetarists, such as a floating discount rate or contemporaneous reserve accounting.[4] It would have tried such reforms at least as an experiment, even if this imposed costs on banks.

Moreover, the Fed frequently explains variations in the money growth rate by pointing to some factor that increased the demand for money. Since the stock of money is limited by the reserve base an increase in the demand for money cannot increase the money stock unless the Fed accomodates, or at least permits this.[5] As long as the Fed refuses to take responsibility for the money growth that actually occurs, one might well doubt its professions of monetarism.

Having said this it is only fair to admit that it is not all a matter of one or the other. We know from personal observation that individuals usually do not change their minds completely in one fell swoop, and institutions are no more likely to do this. Hence, one must expect to find both antimonetarist and monetarist ideas within the Fed, at least for some time.

6. A Price Rule for Monetary Policy

There are several aspects to this question. First, a price rule might be imposed over the long run. If a plausible long-run price stability rule could be imposed it would have a highly favorable effect; inflationary expectations would disappear, so that inflation could be reduced with relatively little unemployment. If feasible, this would be the best way to bring the inflation rate down. However, such a rule could not be imposed merely by legislation and be credible, because it could be repealed by a subsequent Congress. A constitutional amendment would be needed.[6] All the same, legislative recognition of the importance of price stabilization would be of some help in reducing inflationary expectations, particularly if it clearly puts price stabilization ahead of full employment policies. The price index that should be used as the target is the price level of domestically produced goods and services. And the price rule should have a proviso that would exempt price increases due to major supply shocks.

For the shorter run, for which monetary policy is usually made, a price stabilization target is superior to an employment target, despite the fact that 2 percent higher unemployment rate involves more misery than a 2 percent increase in the inflation rate. This is so because the unemployment-inflation trade-off is so unfavorable that an unemployment target would do little good. Over a fairly short period of time unemployment can be reduced by inflationary policies, but subsequently if these inflationary policies are terminated unemployment again increases. Whether there is any net gain in employment is far from clear. And if the inflationary policies are not ended, then the price level rises every year, and also the inflation might easily accelerate. Hence a price rule for monetary policy is better than an employment or real income rule.

A price rule is also superior to the usual "playing by ear" method of monetary policy because the latter is likely to degenerate into an employment rule. It seems to me that in general terms American monetary policy can be described as follows: the Fed is very rightly concerned about the human misery resulting from unemployment, so it adopts expansionary policies. Since nobody knows how low an unemployment rate is consistent with price stability (or a stable inflation rate) and since the Fed cannot gauge the exact effects of its policies it sooner or later brings the unemployment rate down too much, so that the inflation rate accelerates. Then when this becomes apparent, the Fed with good conscience can change to a restrictive policy. This brings the inflation rate down, but raises unemployment, and then the whole process starts again. An explicit price rule would help to avoid this.

An alternative to a price target would be a nominal income target. Since in framing such a target one obviously has to decide on what inflation rate to tolerate, in principle there is not conflict between the two. But suppose the estimates used to make up the nominal income target contain errors; then the two may be inconsistent. For example, nominal income might grow at the desired 8 percent rate, but the inflation rate might be 7 percent instead of the expected 5 percent. With a nominal income target if real income grows at a slower rate than expected, then prices are allowed to grow at a faster rate. This might be defended on the argument that this error would reflect that policymakers underestimated the unemployment cost of bringing the inflation rate down, and that this justifies adopting a more gradual approach to eliminating inflation. In this respect a nominal income target is better than a price target. But a price target has a great political advantage; it is much easier to generate public support for a policy to bring down the inflation rate than for a policy that promises to keep nominal income growing at a certain rate. And, given the pressures for more expansionary policies, a policy to reduce the inflation rate needs all the political support it can get.

Then there is a policy of setting a target for the money growth rate. This too, does not conflict in principle with a price target because the Fed does not aim at prices or income directly, but uses some variable like the money stock as an intermediate target. However, if the Fed makes an error in estimating velocity or in estimating the impact of changes in aggregate demand on the inflation rate, then the two would conflict. Given the danger that financial innovations will in the future substantially change velocity I am uneasy about using a money stock target for the long run, say over a five year period. I would prefer to divide the problem into two parts, long-run strategy and short-run tactics. For its strategy the Fed should choose a price goal, but as tactics to attain this goal it should focus on the money growth rate. The particular money growth rate selected to attain the long run price target can then be changed from time to time.

7. Is the Fed Responsible for Current High Interest Rates?

I may be the only economist who does not claim to know what caused the high interest rates of early 1982. While the various explanations that are given sound plausible, it is too easy to formulate a theory that explains a single fact. I would put more credence in the explanations offered if they would also explain why, just before rates rose, real after-tax rates were negative for so long.

The retardation of the money growth rate in the second quarter of 1982 probably was a factor making for high interest rates then. But this does not mean that an expansionary policy would have reduced interest rates because such a policy would have raised inflationary expectations. One might, in fact say, that in the present situation two types of policies result in high interest rates, restrictive policies, and expansionary policies! This is not really paradoxical. Given the policies we have followed in recent years, interest rates may have to be high (unless we adopt a policy of credit allocation which would be most undesirable). There is no reason to assume that the bad results of past policies can now be avoided.

Footnotes

1. In principle, it would be possible to operate without either a money target or an interest rate target by focusing directly on income. But to do this effectively would be demanding an implausible degree of competence from the Fed.

2. "Money Stock vs. Interest Rates as an Intermediate Target - An Institutional Approach," Kredit und Kapital (forthcoming.)

3. The question is not whether banks are reluctant to borrow, and borrow only for need rather than for profit. If a bank has to meet a loan commitment, or is short of reserves because one of its customers had drawn down his account, it has a genuine need to borrow, but still, meeting this need allows aggregate demand to increase. The relevant distinction is whether the borrowing is triggered by either an increase in reserves needed due to a technical factor, such as a decline in float, or an increased demand for money per dollar of income on the one hand, or an increase on intended expeditures on the other.

4. The Fed is now planning to reduce the lag in reserves to two days. I do not know whether this will help since even with a two day lag the Fed will have to provide the reserves that banks need to meet their reserve requirements, and thus still be accommodating.

5. To be sure, an increase in the demand for money can, via rising interest rates, raise the money multiplier, and hence the money stock. But the Fed can offset this rise in the money multiplier.

6. See my "Using the Constitution to Fight Inflation," American Banker, November 29, 1979.

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Allan H. Meltzer
John M. Olin Professor of
Political Economy and Public Policy

September 3, 1982

Senator Roger W. Jepsen
Vice Chairman
Joint Economic Committee
Congress of the United States
Washington, D. C. 20510

Dear Senator Jepsen:

I am responding belatedly to your letter of August 5. I regret the delay, and I hope you can excuse my tardiness.

I will respond to your questions by number, but some of my answers cover more than one question.

1. Monetarism is the theory of the relation of money to prices and output or of the relation of money growth to rates of inflation and rates of output growth.

2. No. Changes in the demand for money are not large enough or frequent enough to invalidate the central propositions of monetarism. Usually, allegations about changes in the demand for money are a device that the Federal Reserve uses to cover up its errors. To date, no one has produced evidence of large persistent changes in the demand for money. The most that has been shown is that the particular econometric constructions purporting to describe the demand for money in a particular period have not worked in other periods. These demonstrations have nothing to do with the central propositions of monetarism or the correctness of a monetarist policy.

3. No. The Federal Reserve has not followed a monetarist policy since October 1979. The Federal Reserve policy is often inconsistent, but during most of this period the Federal Reserve has attempted to control the level of free reserves.

4. The implementation of the Credit Control Act was based on the mistaken view that control of credit could be used to reduce inflation. In fact the Federal Reserve mishandled monetary policy very badly by allowing the rate of monetary growth to reach record levels. I do not believe that price rules would

stabilize the rate of money growth or the economy. Changes in the mix of prices within the baskets would be fully reflected in the movements of money and in other prices. Improvements in monetary policy operations are an urgent matter, but the proposed price rules are not improvements in my opinion.

7. Monetary policy is one of the factors contributing to the level of interest rates. I enclose a copy of a recent Wall Street Journal article on the subject.

Sincerely yours,

Allan H. Meltzer

AHM/jep

encl.

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STANFORD, CALIFORNIA 94305

DEPARTMENT OF ECONOMICS

August 13, 1982

Senator Robert G. Jepsen
Vice Chairman, Joint Economic Committee
Congress of the United States
Washington, D. C. 20518

Dear Senator Jepsen:

While I am happy to respond to your letter of August 5, I must do so with the disclaimer that I am not a specialist in monetary economics. I do feel sufficiently well-informed about the issues raised in your letter that I feel my answers are of some value, however.

First of all, in my judgement, no one really understands why interest rates have remained so high for the past year or so. I, and many of my colleagues/ whom I feel are truly knowledgeable, have been expecting interest rates to fall for some time now. Rates have fallen rather sharply in the past six weeks or so, of course, and I expect that they will continue to fall in the coming months. I don't believe that their failure to fall can be ascribed to any weakness in the quantity theory of money. Indeed, it is widely recognized that this theory is a statement about the long-run and that over short periods of time changes in the growth rate of the stock of money may affect both the growth rate of real output and real interest rates.

Since the fall of 1979, the Fed has, of course, been following a policy of controlling the growth rate of the money stock. In this sense its policy has been 'monetarist'. However, most monetarists would doubtless argue that the Fed has implemented this policy very imperfectly.

There have been several periods in which the growth rate of M1 has increased sharply -- June-September, 1980; February-April, 1981 and October, 1981-February, 1982. It may well be that such spurts in the monetary growth rate have led the market to believe that the recent decline in the rate of inflation is only temporary. Regardless, however, most 'monetarists' would argue that the Fed's behavior has been far from satisfactory.

In regard to your specific questions:

1. 'Monetarism', it seems to me, is primarily a collection of empirical, as opposed to theoretical, propositions about how changes in the monetary growth rate affect real output, interest rates and prices.

2. The demand for money is one of the most stable economic relationships. Its inverse, the velocity of money, defined as M1, has increased persistently in the post-war period. Its trend rate of growth fell sharply from 1966 through 1972, but deviations about its trend have been relatively small. Real output and its growth rate, have of course, fluctuated. A convincing case can be made, however, that changes in the growth rate of real output are largely induced by changes in monetary growth.

3. See above.

4. The Credit Control Act of 1980 appears to have resulted in a sharp decline in the demand for borrowing which may well have contributed to the sharp subsequent decline in the monetary growth rate. However, the growth rate of the monetary base also fell sharply from March thru June, 1980 and subsequently increased sharply. Consequently, the Fed must bear a substantial share of the blame for the erratic behavior of monetary growth in 1980.

5. As I noted earlier, the monetary growth rate has been quite erratic since the fall of 1979. As I read the evidence, the growth rate of the monetary base on average has only fallen from about 8 to 7 percent per year since the Fed announced its new policy.

6. In my judgement, we don't know enough about the dynamics of the U. S. macro economy's behavior to attempt to follow any so-called price rule. The best policy, I believe, would be one of a constant growth rate of the monetary base, which is certainly within the limits of our current knowledge.

7. As I indicated earlier, I don't believe anyone knows why interest rates have behaved as they have over the past three years. I am confident, however, that if the Fed ~~were~~ is able to smooth out the monetary growth rate, interest rates will indeed fall.

I hope these comments will be of some use to your Committee in its deliberations.

Sincerely yours,

Richard F. Muth

Richard F. Muth, Professor

RFM/jcd

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September 15, 1982

Senator Roger W. Jepsen
Vice Chairman
Joint Economic Committee
Congress of the United States
Washington, D.C. 20510
U.S.A.

Dear Senator Jepsen:

I am replying to your letter of August 5, 1982. Let me first apologize for the long delay in responding. I have been away in England for several weeks.

Let me begin by commenting on the propositions outlined in your first paragraphs and then go on to answer the seven questions that you set out.

Certainly if the quantity of money is fixed, interest rates will fluctuate as a result of changes in the demand for money and of changes in real output in the economy. It certainly does not follow from this however, that "recent changes in the demand for money and in real output... have been...responsible for high interest rates." The fluctuations in the demand for money that have in fact occurred have been trivial compared with fluctuations in earlier years in the growth rate of the supply of money. Also fluctuations in real output are themselves almost certainly largely induced by previously unpredictable random fluctuations in the quantity of money. Further, the high level of interest rates has almost certainly been induced by high growth rates of money, not by tight money. The reasoning here is clear and simple. Rapid monetary growth produces rapid inflation which in turn produces a rise in the nominal rate of interest to compensate lenders for the falling value of the money with which their loans will be repaid.

Those who argue that a "price rule" should be introduced as an alternative to a "monetarist" policy fall into two camps. There are those who are essentially Keynesians who want to abandon monetary targeting in favor of a more flexible approach to demand management policy. They argue for some kind of nominal income rather than price target for monetary policy. The main problem with that approach is that the lags in the operation of policy is such that if a particular nominal income level is targeted upon changes in policy instruments capable of influencing those targets are likely to operate with time lags such that by the time the policies have their effects the situation which triggered the policies will have changed and, in all likelihood, the reverse policy will be dictated. It is this more than anything else that leads to the conclusion that the best that policy can do is to remain neutral. At the other extreme are those who advocate pegging not to a general price level or to nominal income in the aggregate but to some particular price such as gold or some other sensitive commodity index. The key reason for this policy recommendation arises from a judgment that the monetary authorities cannot be trusted to maintain stability of some alternative aggregate. The major objection to this approach is that, whilst independent monetary authorities exist, whether they be central banks such as the Fed or central banks under the direct control of government such as, say, the Bank of England, there will always be a temptation to abandon whatever rules are laid down for commodity price pegging and therefore, some kind of restricted fiduciary standard is required. This proposition was cogently argued by Milton Friedman in Lelland Yeager's fine collection of lectures on monetary constitutions.

Let me now turn to your specific questions:

1. What is "monetarism"? There are too many answers to this question for the term to be used unambiguously. I like to use the term to mean the doctrine that upholds the policy recommendation of maintaining a constant growth rate for the quantity of money somehow defined. Other definitions are fraught with confusion.

2. In my view changes in the demand for money are trivial compared with changes in the supply of money and are of no concern in comparison with the latter. Further, changes in real output are mainly induced by unanticipated changes in money and therefore would largely disappear if the correct monetary policy was pursued.

3. It seems to me that the Fed has been pursuing some form of monetarist policy since October 1979 but I emphasize "some form" as the sense in which the Fed on its own cannot pursue monetarist policy for such a policy requires enshrinement in fundamental law--in the constitution. The bottom line of monetarism is that it is a commitment to a steady growth rate of the money stock forever. Any suspicion that the monetary authorities might deviate from a stable growth rate necessarily engenders expectations of a departure from price stability and has potentially adverse effects upon the economy. Whilst it is impossible to provide a cast-iron guarantee that a fixed growth rate for the money stock will be maintained forever it is possible to do better than leave it to the Fed. Thus, a constitutional amendment mandating a fixed growth rate for the money stock and mandating the Fed to pursue such a policy would be more correctly labeled "monetarist" than the existing policy.

4. I have not studied the implications of the Credit Control Act of March 1980 to offer a useful answer to question 4.

5. I have characterized the policy change that occurred on October 6, 1979 as one of placing less emphasis on the Federal Fund's rate and more emphasis on the growth rate of the money stock. I would not however, characterize it as a dramatic abandonment of the old policies and adoption of monetarism.

6. The problem with adopting a price rule if it is a broad price rule such as that of stabilizing the consumer price index is that the lags in the operation of policy are simply too long for that to be feasible. Changes in policy can only be implemented when the need for a change is observed. By the time the policy has an effect the need will have passed. If the price rule in question is one of pegging the price of some commodity such as gold then I see no way of making that rule stick unless it is supplemented by a rule for the creation of paper money. The Breton Woods system had a price rule--$35 a fine ounce--it did not have a rule for the creation of money. The system collapsed.

7. My suspicion is that current high interest rates are almost entirely due to worldwide deficits by governments (not just the U.S. federal deficit) and are in no way caused by the Fed's monetary policy.

I hope that these remarks and answers to your queries are of some assistance to you. I am sorry to have had to be so brief and again repeat my apologies for the long delay in getting to your letter.

Yours sincerely,

Michael Parkin

MP/lf

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November 12, 1982

Roger W. Jepsen, U.S.S.
Vice Chairman
Joint Economic Committee
G-133 Dirksen Senate Building
Washington, D.C. 20510

Dear Senator Jepsen:

I appreciate the chance to answer your questions concerning monetarism and monetary policy. Let me take the questions in order.

1. What is monetarism?

As with any school of thought, many divergent views are grouped under the general banner of "monetarism." The mainstream of monetarist thought, however, is characterized by the writings of economists such as Milton Friedman, Phillip Cagan, William Poole, and David Meiselman. The basic empirical and theoretical policy prescriptions can be summarized by the following statements:

- Market forces guarantee that, in the absence of outside interference, the economy tends towards a natural demand and supply equilibrium. No permanent involuntary unemployment is possible.
- Inflation is a monetary phenomenon, defined by the relative growth rates of the money supply, velocity, and the real economy. As a practical matter, recent inflation has been caused by excessive monetary growth.
- The demand for money is a stable function of certain observable variables, most notably expected inflation, interest rates, and the level of real economic activity. There is an enormous amount of misunderstanding concerning this statement. To say that a function is stable does not imply a numerical constant. Many critics of monetarism have misinterpreted the above statements to mean that monetarists believe in a constant velocity. Nothing could be farther from the truth. The belief in a stable money demand function merely implies that when any of the variables which determine the function change, the function will change in a predicatable manner. Thus, if expected inflation changes, velocity will also change. This has been argued theoretically by Milton

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Friedman and substantiated empirically by Phillip Cagan in research of various hyperinflations.

- The supply of money can be controlled. The Federal Reserve exerts a great deal of control over the monetary base. In turn, a strong, though imperfect relationship, exists between the monetary base and M1, and between the monetary base and the nominal economy. The two important factors in terms of monetary control are 1) Is there an aggregate that correctly predicts nominal GNP activity? and 2) Can this be controlled? If one or both of these ingredients are absent, monetarism will fail. Empirical research strongly suggests that both ingredients are present in the monetary base.

- The goal of monetarism is price stability. Critics of monetarism have argued that, to monetarists, a money rule is an end in itself. This is incorrect. The goal of monetarism is price stability and monetarists believe that in an imperfect world, of all possible policy options, a money rule provides the greatest potential for price stability.

2. Are changes in the demand for money frequent enough, large enough, and sufficiently long lasting to vitiate the usefulness of "monetarist" monetary policy? What about changes in real output?

To repeat: Monetarism argues that the demand for money is a stable function of certain variables, the most important of which are the real economy, inflationary expectations, and interest rates. Although the long-run trend in velocity has been relatively constant, there have been decided short-run swings in velocity. Does this discount the efficacy of monetarism? In order to answer this question, one must investigate the factors that caused the swings in velocity.

As a backdrop, the role of money in society ought to be examined. Money serves as a store of value and a means of exchange. Any factor which indicates that current money holdings will be less valuable in the future will cause individuals to hold less money and "economize" on their holdings.

Thus, the rate of expected inflation is an important variable in the money demand function. If individuals expect inflation to increase, they will want to hold less money rather than watch their money erode in value. A change in the expected inflation rate will affect velocity.

How do people formulate their expectations of inflation? It is obvious that changes in the money supply are perceived as changing the inflation picture. If the aggregates are growing rapidly, individuals will perceive that inflation will increase and, as a consequence, velocity will increase (the demand for money will decrease).

This points out that if the Fed's policy has wide swings in it, so will the demand for money. If the money supply is growing erratically, then there will be volatility in the demand for money.

In fact, most of the recent short-run volatility in velocity has been caused by unwarranted fluctuations in the money-supply. Since 1979, the variance around money growth has increased dramatically. The fact that velocity has responded in kind is proof of the stability of the money demand function. Should the fluctuations in the money supply be dampened (and they could be), money demand would be better behaved as well.

A similar analysis can be applied to real output. Volatility in monetary phenomena results in increased uncertainty, which in turn affect the real economy. Fluctuations in real output are, in many cases, induced by erratic behavior on the part of the Fed.

3. Is it correct to say that the Federal Reserve has been following a "monetarist" policy since 1974?

A monetarist policy prescription would involve two ingredients. Money growth should be slow, and money growth should be stable. Since 1979, money growth has certainly been slower and as a result, inflation has abated, but the Fed has fared miserably in terms of stability.

The latter failure could be remedied by a change in operating procedure and does not suggest any inherent flaw in monetarism. The most important step that the Fed should make is to stop targeting M1 and look, instead, at the monetary base. Much of the recent monetary volatility has been caused by reactions to changes in M1. If M1 was above (below) its target, the Fed contracted (expanded) the money base in an attempt to bring down M1 and invariably overreacted.

Empirical research conducted in the early 1970's and reaffirmed as of late suggests that a slow, stable growth rate in the base is the best way to insure similar results in M1. Short-run fluctuations in M1 should be ignored; they will eventually dampen and the growth path of M1 will conform to that of the base.

If the Fed adopted changes to eliminate the volatility in money, then they would truly be following monetarist policies.

4. Did implementation of the Credit Control Act in 1980 interrupt the "monetarist" policy announced in October 1974? If so, how and for how long?

Credit controls are the antithesis of monetarist philosophy. Monetarism calls for a control on the money supply process in order to maintain a stable unit of exchange; this would promote competition and the efficient functioning of markets. Clearly, any philosophy which respects free-market enterprise as the path to a healthy economy, would not tolerate government interference in the credit markets. With this orientation, monetarism was not at all in league with the monetary policy which advocated the brief period of controls.

4.

5. If not, then what change actually occurred in October 1979, and how would you characterize Fed policy since that time?

I would describe the 1979 changes as a very imperfect form of monetarism. One of the primary goals of monetarism is to introduce as much certainty into the system as possible—to stabilize the exchange unit. The volatility of the past 1979 monetary scene ran counter to this goal. More, rather than less, uncertainty was introduced into the system, resulting in an additional premium in interest rates.

On the other hand, the average rate of growth of the money supply did decrease, resulting in both lower inflation and lower interest rates. Had this been achieved in a smoother manner, the short-run pain of disinflation would have been minimized.

6. How do you feel about moving towards a "price rule" for monetary policy?

Moving towards a price rule would be a mistake. There are many conceptual, as well as practical, problems with a price rule and, in the final analysis, it is unnecessary—price stability can be obtained via monetarist principles.

One of the major problems with monetary management has been that such management has been subject to the discretion of the Fed. Thus, certain turns in monetary policy could be traced to political pressures. This "discretion" problem would be much in evidence under a price rule.

Consider the case of a gold price rule. If the price of gold increases, it would be a signal to the Fed to contract and vice versa. Unfortunately, the price of gold, or any commodity, could change due to exogenous factors. The proponents of a price rule argue that such exogenous forces could be ignored by the Fed. Once this discretion is reintroduced, we are back to square one. Given various political pressures, market signals could be discounted.

As a practical matter, the "price" observed by authorities would have to be a forward price rather than a spot price. Current price changes are a lagged response to past monetary activities. If, on the other hand, forward prices are increasing, it would be a signal that the market expects increased inflation. Simultaneously, the entire yield structure for interest rates would shift upward due to increased inflation premiums. Thus, gearing monetary policy to interest rates or forward prices would be equivalent.

Either one of these procedures is unnecessary. Empirical evidence strongly suggests that when monetary growth is stable, so are both interest rates and foward prices. Given this relationship, it should be obvious that the easiest way to achieve price stability is to utilize a money rule. Absent unpredictable intervention by the federal government, there is no logical reason to expect wide swings in money demand. The analyst must remember the roll money plays in society. One can expect the real economy to grow at a certain rate and the rate of technical advance in money markets to proceed at a predictable rate as well. Technology in production marches on in a steady fashion—why should financial innovation behave any differently? Since we know a great deal about the steady state growth properties of this economy, a money rule approximates the rate at which additional units of exchange must be added. A "true" money rule will lead to price stability, because it is the lack of adherence to a true money rule that has produced the swings in money demand. There simply is no reason to shift to a price rule; nothing would be gained and much uncertainty may be added to the system.

7. To what extent is monetary policy as currently conducted by the Fed, responsible for high interest rates, as opposed to fiscal policy, and what policy changes, if any, should the Fed make today in order to reduce interest rates?

Over the recent past, interest rates have been primarily determined by inflation expectations. To the extent that Federal Reserve activities have contributed to these expectations, the Fed has been responsible for interest rate motion. There are two components to this phenomenon: the rate of money growth affects interest rates but equally important is the volatility of money growth.

When interest rates were high, it was because money was loose and volatile, triggering inflation expectations. Interest rates have fallen precisely because money growth has been slower. Thus, the prescription for lower interest rates is a credible, slow, stable monetary policy. This can be achieved by establishing a non-inflationary growth rate in the monetary base and ignoring short-run swings in M1, and by establishing a floating (punitive) discount rate. The move away from lagged reserve accounting was also a step inthe right direction.

Adopting sound policies and maintaining them in the monetary area are crucial to long-run economic health. If I can be of further assistance, don't hesitate to contact me.

Sincerely,

David Raboy

David G. Raboy
Executive Director

DGR/sms

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August 9, 1982

The Hon. Roger W. Jepsen
Vice Chairman
Joint Economic Committee
5327 Dirksen Senate Office Bldg.
Washington, D. C. 20510

Dear Senator Jepsen:

In response to your August 5 questions about recent monetary procedures:

1. Monetarism is the idea that monetary policy can and should focus entirely on regulating the quantity of some measure of specific liquid assets, defined as money. Monetarism is not a particular set of technical ways of achieving this goal, but is instead the goal itself.

2. Changes in the public's willingness to hold various types of money have large and abrupt effects on the assumed relationships between monetary base, M1 and nominal GNP. From January to June 1982, for example, a 9.6% rate of growth of monetary base was associated with only a 1.3% rate of increase in M1.

   The same rate of growth of nominal GNP can be inflationary or not depending on real growth. The growth of nominal GNP in 1974-75 was no higher than from 1964-68, but inflation more than doubled. Nominal GNP is therefore an inappropriate objective, even if it could be adequately regulated by controlling some quantity of money.

3. The Federal Reserve's performance since 1975 has been evaluated by monetarist criteria--namely, success in attaining specific rates of growth in certain measures of money over periods of a year or less. Federal Reserve targets moved even closer to monetarist prescriptions from October 1979 through at least 1981, by allowing larger and more frequent changes in short-term interest rates when money growth moved out of the target range. Technical procedures only affect relative success in attaining certain rates of growth

of M1 or M2, not the efficacy of those monetarist targets.

A monetary policy would specify durable objectives and methods of attaining them. In this sense, the United States has had no monetary policy for at least a decade. The definition of a dollar is instead left to central bank discretion.

4. Implementation of credit controls in March 1980 involved a brief change of focus from one side of the banks' balance sheet (deposits or "money") to the other (loans). Raising reserve requirements reduced the efficiency of the affected forms of financial intermediation. Uncertainty about credit conditions probably raised the share of wealth kept in currency, thus contracting M1. Significant effects, however, came from conventional sources--raising the fed funds rate from 14% in February to over 17% in March and April. The Fed subsequently let interest rates drop too far and too fast, but conformed to previous monetarist criticism of "leaning against the wind" by not letting rates fall. That easing was likewise required by the mandate to get M1 back up to some arbitrary range.

5. The main change in Fed policy since October 1979 is to put less emphasis on interest rate stability when that conflicts with monetary targets.

6. Nobody can know in advance what rate of growth of what kind of money will be consistent with price stability. Nor is it feasible to predict the appropriate interest rate for stable prices. The only way of knowing at the time whether money is too tight or too loose (relative to velocity and real growth) is by monitoring some commodity prices that are sensitive to monetary disturbances and relatively insensitive to supply shocks.

   A monetary standard goes even further than such a discretionary "price rule" by defining the unit of account--a dollar--in terms of such a commodity. This provides a superior guarantee, facilitating long-term contracts at low interest rates. A price rule alone, however, would be a much more direct way of attaining price stability than attempting to predict money multipliers, velocity and real output.

7. Interest rates reflect the inability of current monetary procedures to avoid alternating between bankrupting borrowers with deflation and robbing lenders with inflation. The risks of both forms of default, to borrowers and lenders, have not been higher since the years leading up to the 1934 depreciation.

   The federal government's financial problems, like those of private workers and employers, are an unavoidable consequence of high interest rates and the related loss of profits and jobs. Since the government's budget cannot successfully be improved at the expense of the depressed private sector, there is no meaningful sense in which federal borrowing could be said to "cause" high interest rates. That explanation confuses cause and effect, and has never been supported by the slightest evidence.

   The Federal Reserve explicitly controls the key interest rates on discount window borrowings and federal funds. Those rates can be instantly and substantially reduced, as they eventually were in previous contractions (except 1932 and 1937).

   In order to simultaneously assure the markets in bonds and foreign exchange that monetary policy will never again accommodate a resurgence of inflation, there must be a legislated mandate to tighten if there is a sustained rise in prices that invariably give an early warning of inflation. A commitment to sell gold at a fixed price would achieve this purpose, since monetary policy would then have to be tightened as the price rose in order to induce people to hold dollar-denominated assets rather than convert to gold.

   In short, instituting a credible long-term price rule or standard for monetary policy would minimize the risks of bankruptcy and inflation that have raised interest rates and reduced the maturity of loans.

Sincerely,

AR:eg

NATIONAL BUREAU OF ECONOMIC RESEARCH, INC.
269 MERCER STREET, 8TH FLOOR
NEW YORK, N.Y. 10003

August 17, 1982

The Honorable Roger W. Jepsen, U.S.S., Vice Chairman
Congress of the United States
Joint Economic Committee
Washington, D.C. 20510

Dear Senator Jepsen:

I enclose my answers to the questions posed in your letter of August 5.

Sincerely,

Anna J. Schwartz

AJS:jh

enc.

Answers to Questions in Senator Roger W. Jepsen's Letter of August 5, 1982

Q. What is "monetarism"?

A. Monetarism is a doctrine that espouses systematic control of the supply of money by the monetary authorities. The doctrine is based on empirical propositions that repeated testing for many time spans has validated for the United States and several foreign countries. One proposition is that a change in the growth rate of money will after a lag of some months produce a corresponding change in the growth rate of GNP in current prices. Another proposition is that a trend rate of growth of money in excess of the real growth rate of the economy will after a lag of some years produce inflation. A stable growth rate of money at a level not exceeding the real growth rate of the economy is a monetarist prescription for an economic environment free of monetary shocks and with no inflation.

Q. Are changes in the demand for money frequent enough, large enough, and sufficiently long lasting to vitiate the usefulness of "monetarist" monetary policy? What about changes in real output?

A. There is no basis for the allegation that monetary control, if exercised, will be vitiated by the instability of the demand for money. Failure to exercise control has repeatedly been excused by the Fed as the effect of an unstable demand for money, so that the link between the growth rate of money and of GNP in current prices has become loose. A time series analysis of the quarterly behavior of velocity from 1950 to date gives no support to looseness of the relationship either in the past or currently. Changes in real output will affect the demand for money in a predictable way. Rather than trying to fine tune the estimated real output growth from week to week, month to month, quarter to quarter, the Fed would be better advised to keep the growth of money increasing at some stable noninflationary rate.

Q. Is it correct to say that the Federal Reseve has been following a "monetarist" policy since October 1979?

A. The rhetoric used by the Federal Reserve might be so interpreted. The actual performance does not match the rhetoric.

Q. Did implementation of the Credit Control Act in March 1980 interrupt the "monetarist" policy announced in October 1979? If so and for how long?

A. Monetary control was not effectively exercised by the Federal Reserve in the months preceding the implementation, during the implementation, and since the rescinding of the implementation of the Credit Control Act. Is there better proof than that the annual growth rate of money from November 1979 through May 1980 was 1.1 per cent; from May 1980 through April 1981 was 12.5 per cent; from April 1981 throuh October 1981 was -0.2 per cent, and up and down again since that date? The result has been two back-to-back recessions in 1980 and 1981-82.

Q. If not, then what change actually occurred in October 1979, and how would you characterize Fed policy since that time?

A. Pressure from U.S. trading partners, exercised over the declining foreign exchange value of the dollar, forced the Federal Reserve in October 1979 to acknowledge the need to change its procedures in order to achieve more reliable monetary control than theretofore and so to reverse the record of rising and erratic inflation. Rather than relying solely on the Federal funds rate, the Fed announced that it would use nonborrowed reserves as the instrument to achieve control of monetary growth. In operation, the Fed's procedures have increased both the variability of monetary growth rates and of interest rates. The financial markets have reacted to the wide swings in monetary growth by incorporating large risk premia in interest rates at all maturities.

Q. How do you feel about moving towards a "price rule" for monetary policy?

A. Those who argue for a "price rule" allege that monetary authorities cannot control movements in GNP in current prices or the inflation rate by changes in bank reserves. How then will they be able to control some cyclically sensitive price index? The answer is by changing the growth rate of money. There is some basic flaw in logic here. Moreover, how can authorities know when a change in monetary growth in response to changes in the price index will have an effect on prices? All the difficulties that are cited against a money supply rule apply a fortiori to a price rule.

Q. To what extent is monetary policy, as currently conducted by the Fed, responsible for high interest rates, as opposed to fiscal policy, and what policy changes, if any, should the Fed make today in order to reduce interest rates.

A. The Fed is operating in a fashion that produces uncertainty in financial markets. The markets react by demanding and obtaining higher nominal interest rates than would be the case if economic agents believed the Fed was not going to revert to the form it has followed since the mid-60s. When monetary growth accelerates to 12.5 per cent per year, as from May 1980 to April 1981, what degree of confidence in the Fed's commitment to noninflationary monetary growth can markets have? The principal way the Fed can bring interest rates down, without imposing another recession, is to maintain the growth rate of money without the erratic swings that have characterized it in the past 33 months. Of course, the spectre of large deficits makes the markets nervous, and they should be reduced, but basically the interest rate problem lies at the door of the Fed.

Robert M. Sinche

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September 2, 1982

Senator Roger W. Jepsen
Vice Chairman
Joint Economic Committee
Congress of the United States
Washington, D.C. 20510

Dear Senator Jepsen:

It is my pleasure to respond to the questions raised in your letter of August 18, 1982. I believe that there is a good deal of confusion and disagreement, even within the financial community, as to the proper role of the Federal Reserve and monetary policy in our economic system. My view with respect to that role is outlined in the attached response.

Please feel free to contact me should you require additional input on this or other matters.

Sincerely,

RMS/mc
encls.

BEAR STEARNS

WRITTEN STATEMENT PREPARED FOR THE
JOINT ECONOMIC COMMITTEE
CONGRESS OF THE UNITED STATES

Robert M. Sinche
Chief Economist
Bear, Stearns & Company

The purpose of this statement is to discuss, in general, the credit market environment of the last three years, the importance of Federal Reserve activity in influencing that environment, and the impact of a "monetarist" policy on interest rate trends over the period.

Monetarism is the name applied to a procedure for governing the conduct of monetary policy. In application, it indicates that the Federal Reserve should conduct open market operations in a manner conducive to maintaining the money stock along some predetermined target path. The theoretical basis for such an approach is that there is a stable relationship between growth in a monetary aggregate and growth in nominal economic activity. Given the growth potential of the output of goods and services, which is determined by factors such as the capital stock, the labor force, technological change, and energy inputs, the rate of monetary growth also will determine the general rate of inflation over reasonable time periods. A monetarist policy would entail providing a relatively constant rate of monetary expansion in order to stabilize inflation at a low level and provide a stable environment in which individuals and businessmen could make their decisions as to spending, saving and investing.

A natural question arises as to whether the growth in the money stock should be altered to reflect changes in the demand for money emanating from stages of the business cycle or other external factors. That question first presumes that the monetary authorities can, in advance, anticipate these changes in money demand and adjust policy appropriately. History suggests that the task is extraordinarily difficult and, despite all good intentions and professional expertise, in all likelihood cannot be performed adequately. The changes in money demand do not appear to be large enough, frequent enough, or predictable enough to justify monetary "fine tuning".

But apart from the technical difficulties, I believe it would be highly inappropriate to even attempt to "fine tune" monetary growth. It has been shown many times during the history of free market economics that the price system is the most efficient signal for the allocation of scarce resources. Changes in the relative price of credit emanating from changes in real output, external shocks, etc. perform a vital role in our economic system. A rise in the demand for money and credit against the backdrop of stable supply will generate a rise in the price of credit (interest rates) that will serve both to curtail marginal borrowing and encourage additional internally-generated credit supply (savings). Maintaining a stable supply of new money and credit would allow the system to allocate efficiently the supply of money and credit and to prevent excessive dependence on credit supplies not generated by savers in the economic system. Accordingly, even if the monetary authorities could anticipate fully changes in the demand for money, it is not at all clear that they should act to prevent those market forces from allocating credit efficiently throughout the system.

In this light it is difficult to conclude that recent Federal Reserve policy (since October 1979) has been responsible for high interest rates over the past 2 1/2 years. Unfortunately, over the past 20 years the Federal Reserve attempted to override market forces in the credit markets. As the economy moved through periods of economic recovery, liquidity would begin to deteriorate in the economy and credit demands would rise. Rather than allowing the price system to allocate credit and encourage savings, the Federal Reserve maintained strict price (interest rate) controls and attempted to supply the excess credit demanded at the controlled price. As economic participants came to realize that the Federal Reserve consistently would increase money and credit supply to accommodate their borrowings, credit usage multiplied in the economy. During the economic recovery in the late 1970s it took more than twice as much credit in the nonfinancial sector of the economy to generate one dollar of GNP as it did in the recovery in the mid-1950s. Clearly, a policy of adjusting new external credit supply to accommodate demands at artificially low prices created an economy that was increasingly dependent on credit supplies. That accelerating supply of new money and credit provided by the Federal Reserve also was the basis for the persistent acceleration of inflation over the last 15 years.

Credit Usage in Economic Recoveries

Economic Expansion	Nonfinancial Funds Raised as a Percent of GNP
IIQ'54-IIIQ'57	8.1
IIQ'58-IIQ'60	9.8
IQ'61-IIQ'66	10.3
IIQ'67-IVQ'69	11.0
IVQ'70-IVQ'73	14.8
IQ'75-IQ'80	16.6
IIIQ'80-IIQ'81	14.9

Since October 1979 the Federal Reserve has adopted a policy that has emphasized controlling the quantity of new money and credit supplied. The marketplace simultaneously was forcing an effective deregulation of the price of credit. Savers opted to utilize investment vehicles that would pay competitive market rates because traditional savings vehicles did not compensate them for the reduced value of money due to the accelerating rate of inflation. As flows into nonregulated investment vehicles increased, regulatory authorities were forced into gradually deregulating the price of credit. The combination of restrainted new credit supply, the deregulation of the price of credit and the excessive dependence on credit usage in the economic system created the condition under which the real and relative price of credit (interest rates) exploded.

The Federal Reserve's part in this process has been relatively minor. If the Federal Reserve had attempted once again to accommodate the economy's credit demands, private suppliers of credit would have withdrawn their funds from financial assets, pushing interest rates even higher. By maintaining a stable supply of new money and credit, the Federal Reserve has convinced borrowers to restrain their credit usage. At the same time this new confidence in anti-inflationary policies has brought about additional private sector savings supply, and the personal savings rate has moved higher. As a consequence, interest rates have been on a steadily declining trend since late 1980, despite the maintenance of restrained money supply growth by the Federal Reserve. In fact, the Federal Reserve's restrained policy has encouraged a better balance between private sector credit supply and demand while generating a major reduction in the underlying rate of inflation, conditions that are conducive to a more sustainable decline in interest rates.

I believe it would be correct to say that the Federal Reserve has, in general, followed a more monetarist policy since October 1979. Obviously, there are different degrees of success in maintaining stable monetary growth. The volatility of monetary growth has been excessive, particularly during the first 18 months of the new policy, and at times it appeared as though the Federal Reserve had retreated to an interest rate targeting process. But as the financial markets and the Federal Reserve gained more experience with the monetarist approach, results improved. Using four-quarter changes in M1, money supply growth has ranged between 5.0 and 6.5 percent beginning in the third quarter of 1981 through the third quarter of 1982. This greater stability in monetary growth conditions has been reflected in a somewhat more stable interest rate environment, particularly during 1982.

Part of the reason for monetary volatility during the first six quarters of the new monetary policy approach was the ill-advised implementation of the Credit Control Act in March 1980. Rather than letting investors and borrowers interact in the marketplace to adjust the price and quantity of credit supplied and demanded, the monetary authorities attempted to arbitrarily reduce credit usage. As history has demonstrated many times, artificial restrictions on the consumption of goods and services provide only temporary relief to underlying problems. In much the same way that continued energy price controls and allocations during the mid-1970s impeded the eventual new equilibrium in the energy markets, the credit control policy of 1980 interfered with the ongoing market process in the credit market. Although it temporarily relieved the pain of high interest rates, it did nothing to help address the fundamental imbalance between credit demand and savings supply. The imbalance was quickly reflected during the second half of 1980, as credit demands exploded, the personal savings rate declined and interest rates soared. Only as market forces were once again permitted to operate freely have we witnessed a decline in credit usage, a rising in savings supply and a gradual downtrend to interest rates.

While the Federal Reserve's implementation of a "monetarist" approach has been successful in reducing both inflation and interest rates over a reasonable time horizon, during some of the more difficult periods of this transition process analysts have proposed alternate monetary policy rules. One such alternative was a "price rule" for monetary policy, a procedure under which the Federal Reserve would attempt to stabilize the value of gold or a sensitive commodity price index. Under such a procedure the Federal Reserve would add (reduce) bank reserves if the price of the chosen price index was declining (rising).

Unfortunately, there appear to be significant problems with the implementation of such a policy. The major problem involves the choice of an appropriate basket of commodities. If the market basket chosen includes too narrow a list of commodities, it would leave policy changes potentially subject to specific shocks in the supply or demand situation of a particular commodity. On the other hand, the choice of a wider basket of commodities opens up the risk of serious time delays between Federal Reserve actions and the price response of the market basket. In particular, most analysts estimate the lag between changes in monetary growth and changes in the general rate of inflation at about two years. Even if the lag was significantly shorter for a smaller market basket of goods, say three to six months, the time delay between Federal Reserve actions and measured market reactions could send misleading signals to the monetary authorities for an extended period of time.

In addition, it is not clear that the appropriately chosen market basket would remain constant over time. Periodic review of the market basket to account for changes in tastes, technological change, etc. would become necessary. In short, the price rule alternative appears to create additional complexities in the monetary policy arena without demonstrable improvements in results.

In general, I would conclude that the negative reaction to "monetarism" has been overdone and will gradually dissipate. One must recall that October 1979 marked a turning point not only in monetary procedures but also in the general trend of external money and credit creation in the U.S. economy. There is no reason to expect the resulting transition process to be smooth or painless, especially in an economy where excessive credit dependence clearly existed. In many ways the concern over high real and nominal interest rates during the last 2 1/2 years is similar to the concern over high real energy prices in the late 1970s. When an economy that was highly dependent on profligate energy usage had to adjust to an environment of deregulated energy prices and insufficient internally-generated supply, the transition process was difficult. On numerous occasions policymakers recommended reinstituting price controls in an attempt to "solve" the problem. Instead, market forces generated tremendous reductions in energy usage and a significant increase in new supply, relieving the imbalance in domestic energy markets and creating a sounder energy base for the U.S. economy in the 1980s.

Much the same process appears to be at work in the credit markets. A more restrained supply of new money by the Federal Reserve has led borrowers and savers to review their behavior of the last 10 years. Corporations are becoming less dependent on credit, as are individuals and speculators. At the same time, savers, particularly consumers, have begun to increase their acquisition of financial assets as prospective returns improve in a disinflationary environment. These are constructive, lasting adjustments that significantly enchance the prospect for future growth in savings, investment and real economic performance in the U.S. economy.

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August 24, 1982

The Honorable Roger W. Jepson
Vice Chairman - Joint Economic Committee
United States Congress
H2-359 House Office Building
Washington, D.C. 20515

Dear Senator Jepson:

Thank you for your letter of August 5, 1982. I appreciate the opportunity to express my views on why interest rates have remained so high, until recent weeks, and have remained volatile.

I agree that monetary policy is the principal factor in causing the overall high level of interest rates. However, I do not believe that it is due to "the inherent weaknesss of the 'quantity theory'". The high and volatile interest rates are not due to erratic changes in the demand for money due to fluctuating inflation and real output of the economy. Rather, my examination of the data suggests that it is Fed engineered rapid accelerations and decelerations in the money supply growth which have led to these things, including high and volatile interest rates. The table of acceleration in money growth and interest rate changes is an illustration of my position.

In this table I have identified turning points in money growth rates since October 1979, and have roughly calculated the annualized money growth rate since the last turning point in column 3. Column 4 shows the change in the annualized money growth rate occurring at this date, whereas column 5 indicates how much the three month treasury bill rate changed over the 8 week span surrounding the change in policy.

The result is striking. In almost all cases, when money growth accelerated, interest rates declined, and when money growth decelerated, interest rates rose. If interest rates were changing due to changing money demands, as implied by your letter in suggesting the inherent weakness in monetarism, interest rates would rise when money growth was accelerating and conversely. Since interest rates have moved perversely to the direction predicted if it were due to an unstable money demand function, it must be that the college sophomore money and banking theory of money supply changes and interest rate movements is the preferred explanation.

In this regard, because these swings in money growth are among the greatest on record, the resulting interest rate swings are also at historical highs. As a consequence, today bond prices, which move inversely with interest rates, frequently change as much in a day as they used to in a month, introducing a great deal of price risk into debt obligations. This risk is not default risk, but a price risk due to the fact that interest rates may be significantly different in a few hours or days from where they are now. And this price risk applies equally to government debt and to corporate debt.

The argument that interest rates are "near record highs because of slow-steady money growth" is inconsistent with how I read the data. There is no doubt that default risk on corporate debt today is large reflecting the highest bankruptcy rate since the mid-1930's. During every recession since 1920 that I have examined, the ratio of the Baa corporate debt rate to the long term government treasury rate has risen, so that, by the trough of recession, the ratio of the Baa rate to the long term treasury rate averaged 1.5. This increase reflects the greater default risk of Baa corporate debt, especially during recession. Conversely, during cycle expansions, the ratio of the corporate Baa rate to the long term treasury rate declined to an average of 1.3 at cycle peaks, as the business expansion lowered the default risk of corporate debt. Today the ratio is only 1.28 -- low by historical standards even in boom periods and without precedent near a recession trough.

Why? Because it is unlikely investors feel the tax ~~rate~~ cut will cause the U.S. government to default, it must be that the volatile monetary policy noted in the table has pushed up the "price risk" on both corporate and government debt, and my rough estimate of this price risk is about 500 basis points in interest rates. As an approximation, let the long term treasury rate be about 8 percent (high by historical standards reflecting relatively tight money policy, the deficit and the expected rate of inflation over the next five years) and the Baa rate be about 12 percent - the historical 1.5 ratio between them. To this, add 5 percent price risk premium to both and the rates are not far from the August 13 quote of 13.07 for long term U.S. governments and 16.75 for Baa corporates.

Thus, I must conclude that the high interest rates are a result of lurching monetary policies and not due to slow steady growth as the quantity theory advocates, nor are high interest rates due to the expected federal government deficits. However, I do not recommend that we revert back to an interest rate rule. As the table shows, we have had anything but steady money growth in the past three years, and it is unfair to characterize these years as a failed experiment of the quantity theory.

Sincerely yours,

J. Ernest Tanner

J. Ernest Tanner
Professor

ACCELERATION IN MONEY GROWTH AND INTEREST RATE CHANGES

(1) Money Turning Point	(2) Date	(3) Annualized M1 Growth Since last Turning Point	(4) Change in Annualized Money Growth	(5) Change in TB Rate*
Peak	OCT 3, 1979	+11.5%	-12.9%	+293
Trough	NOV 28, 1979	- 1.4%	+13.5%	- 39
Peak	FEB 20, 1980	+12.1%	-25.5%	+376
Trough	APR 30, 1980	-12.4%	+27.4%	-703
Peak	NOV 26, 1980	+15.0%	-28.1%	+534
Trough	FEB 4, 1981	-13.1%	+36.9%	+ 17**
Peak	APR 22, 1981	+23.8%	-35.4%	+366
Trough	JUL 1, 1981	-10.6%	+17.8%	-124
Peak	SEP 16, 1981	+ 7.2%	-12.3%	- 98
Trough	OCT 28, 1981	- 5.1%	+29.7%	-378
Peak	JAN 13, 1982	+24.6%	-30.6%	+291
Trough	MAR 17, 1982	- 6.0%	+13.4%	- 76
Peak	JUN 12, 1982	+ 7.4%		

* Basis points: 4 weeks either side of turning point

** Three weeks later, -238 basis points.

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PRINCETON, NEW JERSEY 08544

August 31, 1982

The Honorable Roger W. Jepsen
United States Senate
Joint Economic Committee
Washington, D.C. 20510

Dear Senator Jepsen:

This is in reply to your letter of August 5 asking for my views on "Monetarism" and on new proposals for "price rules." My views are contained in the following answers to the specific questions listed in your letter:

1. What is monetarism? Monetarism, as generally understood by macroeconomists, has three main tenets: First, changes in the rate of growth of money have a significant effect on the economy. I particular, reductions in money growth depress output and employment, and eventually lead to a reduction in inflation. Second, according to the monetarist views, a primary reason for economic instability in the United States and other countries is the instability of money growth. Erratic fluctuations in money growth are said to be the prime force behind business cycle fluctuations. The third tenet follows directly from the second: business cycle slumps could be avoided by preventing erratic changes in money growth; that is, by holding the growth rate of money constant.

In my view only the first of these tenets is correct, and it is shared by almost all macroeconomists today, not just monetarists. Although economists still differ on why changes in money growth affect the real economy, history has shown that these effects are large and significant. There is little evidence for the second and third tenets, however. Especially in the last 15 to 20 years in the United States, erratic fluctuations in money growth have not been the primary source of economic instability. This instability has originated in supply shocks, such as the OPEC price increases. Monetary policy has influenced how these supply shocks have effected the economy, but it would be misleading to say that a steady growth of money could have prevented business cycles.

2. Are changes in the demand for money frequent enough, large enough, and sufficiently long lasting to vitiate the usefulness of "monetarist" monetary policy? What about changes in real output? Shifts in money demand do occur frequently. Some of the shifts are large, and some last a long

time. In my view, however, it is possible for the monetary authorities to discover shifts in money demand and to react to them with a relatively short lag. Such shifts should be accommodated by changing the supply of money. This is appropriate both for a monetarist policy and for a more activist policy in which the money supply is used countercyclically. Even the most extreme monetarist policy needs to be based on an estimate of the long run secular drift in money demand -- or velocity drift -- in order to determine the growth rate of money consistent with price stability. If this rate of a velocity drift changes then the target growth rate of money should also be changed if it is to remain consistent with price stability. As long as a "monetarist" program is flexible enough to be adjusted, such shifts will not in themselves vitiate the policy. A perfectly rigid "monetarist" growth rate would be extremely undesirable, and could lead to increased economic instability in the face of money demand shocks.

3. Is it correct to say that the Federal Reserve has been following a "monetarist" policy since October 1979?

5. If not, then what change actually occurred in October 1979, and how would you characterize Fed policy since that time?

The stated change in October 1979 was in the operating procedures of the Fed. Rather than controlling money growth by manipulating the Federal Funds rate, the Fed stated that it would control money growth by manipulating reserves directly. Because, both before and after the change, the Fed has stated that it wanted to control money growth, I do not think it is accurate to say that the Fed switched to a monetarist policy. Moreover, as many monetarists have pointed out, the short-run growth rates of money have become more volatile since October 1979 which is contrary to a switch to a monetarist policy.

The actual change that occurred near October 1979 was that Fed began, much more seriously than in earlier years, to reduce the rate of growth of nominal GNP in order to reduce the rate of inflation -- that is, to disinflate the economy. The change in operating procedures probably made this job easier politically, for at least awhile, by reducing political pressures on the Fed to lower interest rates. A reduction in the growth rate of nominal GNP would be expected to raise interest rates, as in fact it did. The overall effort of the Fed to reduce nominal GNP growth has been successful. And as expected, this has reduced inflation, and as a by-product caused high interest rates and a recession.

Because it is not practical for the Fed to publicly target on nominal GNP, the policy discussions have not been in these terms. But the disinflation effort of the Fed should not be interpreted as the beginning of a "monetarist" policy. The Fed, for example, has not explicitly ruled out countercyclical goals, and the recent "easing" of the Fed this summer indicates that there is some concern that policy should actively prevent the recession from getting any deeper. Moreover, as most "monetarists" have argued, the short-run fluctuations in the money supply seem to be a long way from a monetarist policy. To be sure the Fed has stated its monetary policy goals in terms of money growth rates, and this has probably restricted the Fed more than if it had stated its intentions in terms of its goals for nominal GNP growth. In the view of some market participants an increase in money growth above the target range — even if necessary because of a money demand increase — would raise credibility problems. This may have led to a perception on the part of the members of the Federal Open Market Committee that credibility is very closely linked to meeting these growth targets. But with multiple measures of money to discuss at its meeting, the FOMC appears to have avoided sticking to the rigid targets of any one money supply in the interests of credibility.

4. Did implementation of the Credit Control Act in March 1980 interrupt the "monetarist" policy announced in October 1979? If so, how and for how long? The Credit Control Act caused some of the short run fluctuations in money growth mentioned above, and in this sense made the policy look less monetarist. This act also was responsible for the temporary downturn in the economy in 1980 which has now been classified as the recession of 1980.

6. How do you feel about moving towards a "price rule" for monetary policy? Such a policy would be a mistake. Frequent changes in relative supplies and demands for commodities can cause a price index to move erratically. A policy such as a "price rule" which is actively trying to counteract these temporary movements would be likely to increase economic instability. A price rule would at some times require a rise in interest rates and a contraction of economic activity. For example, if the price index rose, the Fed would have to contract demand by increasing interest rates and this would cause a recession. More to the point of your next question, if the Fed had attempted to stabilize a price index starting in October 1979 — say, to keep the CPI at 230 — then there would have been a much larger increase in interest rates and a much larger recession than we had.

7. To what extent is monetary policy, as currently conducted by the Fed, responsible for high interest rates, as opposed to fiscal policy, and what policy changes, if any, should the Fed make today in order to reduce interest rates? The Fed's disinflation effort is largely responsible for the high interest rates. When aggregate demand growth is reduced, the past trends in prices and especially wages cannot be instantaneously broken because of formal and informal contracts. These past trends in prices and wages continue to generate a growing demand for money and credit. When the growth of money and credit is reduced by the Fed's disinflation, interest rates must rise as supply falls short of demand. This is what has happened in the last two years.

This period of high interest rates can be shortened if the Fed is explicit about its policy intentions and moves gradually but resolutely. Then wages and prices can decelerate slowly at first and then more quickly as workers and firms begin to expect that the disinflation will be permanent. The recent decline in interest rates which accelerated in August has been brought on primarily by a reduction in money demand growth due to the sharp decline in nominal wage growth and the reduction in general inflation. A reduction in inflationary expectations has accelerated this process.

Large budget deficits clearly have an effect on interest rates, especially in a full employment economy. This is why it is crucial that the budget deficits now projected for the mid to late 1980's be reduced. But budget deficits are not a prime factor in the high interest rates we have observed during the last two years.

Sincerely,

John B. Taylor

John B. Taylor
Professor of Economics and
Public Affairs

JBT:sdc

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MARK H. WILLES
Executive Vice President
Chief Financial Officer

September 10, 1982

The Honorable Roger W. Jepsen
United States Senate
Congress of the United States
Joint Economic Committee
Washington, D.C. 20510

Dear Senator Jepsen:

Thank you for your letter of August 5th in which you ask me to comment on several questions relating to the conduct of monetarian fiscal policy. Attached is a brief memo which responds to the issues which you raised. I hope that in some small way you find it useful.

I appreciate your seeking my views on these important matters. I hope your hearings go well.

Sincerely,

Mark H Willes

Mark H. Willes

MHW:gg
Attach.

1. What is "monetarism"?

"Monetarism" defies a simple definition. It encompasses many theories and beliefs. There are two propositions, however, which seem central to all monetarist doctrine. The first is that inflation is caused by excessive growth in money. Although other factors, such as the business cycle and supply shocks, can affect inflation temporarily, monetarist doctrine maintains that in the long run inflation is purely a monetary phenomenon. The second proposition is that monetary policy should aim to control the growth of money along a smooth, noninflationary path. Using monetary policy to counteract the business cycle is eschewed on the grounds either that money's effects on the real economy are very unpredictable or that anticipated changes in money have no real effects. It follows that monetary policy should be directed at the goal it can best attain: long-run price stability.

2. Are changes in the demand for money frequent enough, large enough, and sufficiently long lasting to vitiate the usefulness of "monetarist" monetary policy? What about changes in real output?

Changes in the demand for money arise from essentially two sources: changes in the level of income and changes in asset portfolios at given levels of income. The first type of change presents no problems for monetarist policy, but the second one does.

If the money supply is kept on a predetermined path as monetarism requires, then shocks to income are moderated by changes in interest rates. For example, should real output fall unexpectedly, income would fall which, in turn, would cause a decline in the demand for money. Interest rates then would fall, stimulating aggregate demand and restoring some lost output. In this case monetarist policy would provide an automatic income stabilizer. In fact, many monetarists argue that the reason output has fluctuated as much as it has is the Federal Reserve has not been resolute enough in attaining its monetary targets.

Changes in money demand from portfolio shifts conceptually can cause problems for monetarist policy, because they lead to changes in interest rates and economic activity that are not desired. These shifts could be in and out of domestic assets, such as from demand deposits to money market mutual funds, or in and out of national currencies, such as from dollars to marks. There is some evidence that both types of shifts have been important in the past few years.

One measure of changes in money demand due to portfolio shifts is the quarter to quarter change in the growth of income velocity of money. The table below shows the variability in income velocity growth of money for the monetary aggregates: monetary base, M1, and M2 over the last 10 quarters.

INCOME VELOCITY OF MONETARY AGGREGATES
(Quarterly Growth at Annual Rates)

		Monetary Base*	M1	M2
'80:	1	3.3	4.9	4.2
	2	-6.2	2.9	- 5.4
	3	1.9	- 3.0	- 3.0
	4	3.9	3.3	5.7
'81:	1	13.5	14.3	11.4
	2	- 0.5	- 3.9	- 6.7
	3	6.7	11.1	2.6
	4	- 0.9	- 2.7	- 5.6
'82:	1	- 8.6	-10.7	-10.1
	2	- 0.3	3.7	- 2.5

*Board of Governors, adjusted for changes in reserve requirements.

If the income velocity of money were stable, it would indicate that portfolio shifts have been unimportant. Velocity could be volatile, however, and these shifts could still be unimportant. This is possible if the movements in velocity were explained systematically by movements in other variables, such as interest rates or stock values. Thus, evidence on portfolio shifts is better obtained by examining money demand equations directly. Yet, Jim Duprey in "The Search for a Stable Money Demand Equation" (Quarterly Review, Federal Reserve Bank of Minneapolis, Summer, 1980) conducted an extensive survey of published work and could find no money demand equation (M1 or M2) which passed statistical tests for structural stability.

Most researchers surveyed in Duprey's article felt that much of the instability in money demand has been due to the introduction of new financial instruments such as overnight repurchase agreements and money market mutual funds which are close substitutes to traditional transactions balances. Ronald McKinnon, however, presented evidence that there also have occurred significant shifts in demands among national currencies ("Currency Substitution and Instability in the World Dollar Market," American Economic Review, 72, June, 1982).

The evidence that the demand for money in the U.S. is not stable does not mean necessarily that monetarism is a mistake. The short-run shifts in money demand likely cancel out to a great degree, because researchers do tend to find stable long-run relationships between money and price or income. And, monetarism may still be better than other alternatives.

3 & 5. Is it correct to say that the Federal Reserve has been following a "monetarist" policy since October 1979? If not, then what change actually occurred in October, 1979, and how would you characterize Fed policy since that time?

The Federal Reserve made two changes to monetary policy in October, 1979, it increased its commitment to the goal of price stability through control of money and it altered its method for controlling money. The first change was a movement in the direction of monetarism, but the second was not.

The Federal Reserve announced a policy of gradual deceleration in the growth of money. On the whole, it has followed through on that policy. Several different times the Federal Reserve allowed the federal funds rate to reach unprecedented highs--even in a weak economy--in order to bring the growth of money back into its target range. Since the fourth quarter of 1979, M1 has grown at an annual rate of 6.3 percent, down from 7.8 percent in the previous 10 quarters.

For this policy to be successful the Federal Reserve must convince people it plans to carry it through. The Fed has not been entirely successful. While some financial economists speak of the Fed's gain in credibility, others remain skeptical. The latter point to Chairman Volcker's comments at the July hearings on monetary policy that the Fed would tolerate growth in money above its target and that it would not lower the target ranges in 1983. Perhaps, his comments indicate that while the Fed has become more committed to monetarism, that commitment is not absolute.

The Fed also changed its operating procedures for the control of money, beginning in October 1979. Instead of using the federal funds rate as the instrument to control money, the Fed turned to using nonborrowed reserves. Formerly, the Fed had fixed the federal funds rate to hit the point on the money demand function consistent with its monetary targets. The Fed felt that a nonborrowed reserve instrument would give it better and more direct control of the stock of money, while possibly sacrificing some in interest rate stability.

The experience since October 1979 is that there has been more volatility in both interest rates and money growth than previously. One explanation is that the Fed's new operating procedure is inferior to its old procedure. According to this explanation, which is given by Allan Meltzer and others, the new procedure amounts to fixing the federal funds rate and then throwing in some random noise. The Fed, it is maintained, chooses the level of nonborrowed reserves to produce the federal funds rate to hit the point on the money demand function consistent with its monetary targets. But since the relationship between nonborrowed reserves and the federal funds rate is not perfectly predictable, this procedure adds noise to the procedure of fixing the federal funds rate directly.

This criticism of the Fed's new operating procedures does not imply that the Fed should go back to controlling the federal funds rate. Perhaps, it should attempt to control the supply of money by fixing total reserves or the monetary base and, thus, let interest rates be determined by the demand for money. The point is, this procedure has not been tried.

4. Did implementation of the Credit Control Act in March 1980 interrupt the "monetarist" policy announced in October 1979? If so, how and for how long?

Implementation of credit controls disrupted the economy and altered asset demands. Since people were not able to borrow or lend all they wanted, they were forced to change their decisions about how much to spend and when to spend it and about how to invest their money. The disruptions which were caused generally seemed to be of short duration. Some evidence for this is that a statistical forecast of 1980, based on data through 1979 and with no adjustment for credit controls, was very close on the four quarter growth rate of real GNP although it was way off on the quarterly pattern ("The U.S. Economy in 1980: Shockwaves from 1979," by Preston Miller, Tom Supel, and Tom Turner in the Federal Reserve Bank of Minneapolis Quarterly Review, Winter, 1980).

Even though there does not seem to be much evidence of longer-run changes from the implementation of credit controls, there likely were some. The fact that they were imposed would seem to increase the probability that they will be imposed again. We would expect individuals and firms to have developed new strategies or arrangements to protect themselves in the eventuality that credit controls are implemented again.

6 & 7. How do you feel about moving towards a "price rule" for monetary policy? To what extent is monetary policy, as currently conducted by the Fed, responsible for high interest rates, as opposed to fiscal policy, and what policy changes, if any, should the Fed make today in order to reduce interest rates?

When budget deficits are ongoing, monetary and fiscal policies must be considered together. Federal budget policy determines the growth in total federal debt; monetary policy determines how that debt is divided into noninterest-bearing base money and publicly-held Treasury securities. The tax on money holdings (inflation) and the tax on Treasury securities (the decline in their real value) must cover in a real sense the ongoing budget deficit.

A given deficit policy places limits on monetary policy. If budget deficits are persistently large, for example, the Fed's choice is between monetizing the debt and causing inflation or not monetizing it and causing higher real interest rates.

Monetary policy also places limits on fiscal policy. If monetary policy determines the inflation tax, the tax on bond holdings must be whatever it has to be to cover the budget deficit. For bond issue to raise revenue requires either a negative real interest rate or steadily declining bond prices. The latter translates into steadily increasing interest rates. Not every policy the Fed follows will allow the budget deficits to be financed. If the inflation tax is too low, the need to finance the rest of the deficit may exceed the total which can be raised by the bond tax, in which case the real interest rate and real debt burden would rise without limit.

The need to coordinate monetary and fiscal policies, paradoxically, provides a rationale for unconditional control of money. A monetary policy of this type limits the size of deficits which can be run. Taking away the federal government's option of monetizing its debt makes its budget policy like that of state and local governments. While it can still issue debt, that debt must be backed by higher revenue in the future.

Price rules for monetary policy, such as commodity standards, limit by institutional arrangement the capability of monetizing government debt. This is desirable if the Federal Reserve cannot be trusted to limit the stock of fed money in the future. Commodity standards may introduce other problems, however; if the commodity bundle is too narrow, its demand or supply may have little relation to demand or supply conditions in the whole economy. In this case stabilizing its price may not be stabilizing for aggregate prices. On the other hand, if the commodity bundle is too broad, it may not be possible to stabilize the bundle's price any better than the Fed can now stabilize aggregate prices.

In addition, some price rules may not be feasible. If the Fed announced it would buy or sell gold at $200 an ounce, for example, the U.S. would likely see its gold stock disappear. In the long-run it may not be possible to fix a relative price.

OTHER MATERIAL SUBMITTED FOR THE RECORD

Excerpt from Informal Talk of
Paul A. Volcker to Business Council
At Hot Springs, Va. 10/9/82

As you know, yesterday we made a further reduction in the discount rate to 9-1/2 percent. As is usually the case, that change was, in an immediate sense, designed to maintain an appropriate alignment with short-term market rates. It was, of course, also taken against a background of continued sluggishness in business activity, the exceptional recent strength of the dollar on the exchange markets, and indications of strong demands for liquidity in some markets.

In the light of all the potentially confusing comment in the press in recent days, which seemed to be based on a combination of partial information and reportorial speculation, it may be desirable to reiterate what seems to me obvious; the small reduction in the discount rate -- as in the case of the four changes of similar magnitude in July and August -- represents no change in the basic thrust of policy.

In assessing economic and financial developments over recent months, I would also point out again what I have said on a number of occasions before: there is growing evidence that the inflationary momentum has been broken. Indeed, with appropriate policies, the prospects appear good for continuing moderation of inflation in the months and years ahead. Continuing progress toward restoring price stability is an essential part of building a solid base, not just for recovery but for sustaining expansion over a long period. Concern about inflation, and monetary discipline, is not something we can turn on and off; it will be a continuing priority concern of policy.

What does inevitably change is the financial and business environment in which we operate. Unfortunately from the standpoint of reporting and communication, the continuing thrust of monetary policy cannot be adequately measured by any single or simple symbol. Headlines can be misleading.

I hope we have all learned that the level or direction of interest rates is not, by itself, a reliable test of "ease" or "restraint" -- it all depends upon the circumstances. Lower interest rates in an economy in recession are not unusual, and are consistent with the need for recovery. But lower interest rates do not in themselves indicate a change in basic policy approach. Over longer periods of time, achieving and maintaining the lower level of interest rates we would all like to see must, in a sense, be a reward for success in dealing with inflation; artificially forcing the process would in the end be counterproductive. What is needed is market conviction that the fundamentals are consistent with lower interest rates, and I believe that is what we have been seeing for some months.

The emphasis on monetary and credit aggregates in conducting and interpreting policy during recent years is, of course, useful in part because of the unreliability of interest rate measures in gauging the necessary degree of restraint. We express policy in terms of broad targets for the various definitions of money on the basic thesis that, over time, the inflationary process is related to excessive growth in money and credit. But you have also heard me repeatedly express caution about the validity of any single measure, or even all the measures in the short run.

We have to be alert to the possibility that relationships may be disturbed by technological or regulatory changes in banking, or more broadly by shifts in liquidity preferences and velocity.

We face over the next few months, not just the possibility but the virtual certainty of distortions -- distortions growing out of legislation and regulation -- in the M1 number that is so widely followed in the markets. Right now, and over the next few weeks, some $31 billion of "All Savers Certificates" are maturing, and in large part will not be rolled over. As those funds move to other investments, some amount will temporarily pass through checking accounts, or be "parked" in those accounts for a time awaiting new investment decisions. We know M1 will be affected, but we simply have no way of measuring the degree of that shifting. And, just as that process is expected to unwind over the next month or so, the new "money market fund-type" deposit account for banks and thrifts will be introduced. Sizable transfers of funds into those accounts, which will have considerable checkable and transactions capabilities, are anticipated, including shifts from regular checking and NOW accounts. The result will probably be to depress M1 growth for a while -- assuming the new accounts are not included in M1. But again we have no way of anticipating the magnitude, or even the direction of impact should the new accounts be tied to existing NOW accounts. Both the "ups" and "downs" in M1 reflecting these regulatory changes will be artificial and virtually meaningless in gauging underlying trends in "money" and liquidity. The potential problems have been common knowledge in market circles.

In the circumstances, I do not believe that, in actual implementation of monetary policy, we have any alternative but to attach much less than usual weight to movements in M1, over the period immediately ahead. We will, of course, analyze the data carefully to assist us in assessing underlying trends, but it is likely to take some months before new relationships can be judged with any degree of reliability in a world of radically new deposit instruments with transactions capability.

Fortunately, while the M2 and M3 aggregates may also be affected by the new deposit instruments, the impact should be relatively much less. Those aggregates are not only much larger, but most of the shifts among financial instruments are expected to take place within those large aggregates. For instance, shifts by individuals among "All Savers Certificates," checking accounts, money market certificates, money market mutual funds, and the new account would all leave M2 unaffected because they are all counted within that aggregate. If the shifts are into (or out of) market instruments, such as tax-exempt bonds or Treasury bills, the totals would be affected, but probably to a limited degree.

The fact that, for the time being, underlying monetary growth and reserve provision cannot sensibly be gauged by directly observing movements in M1 -- up or down -- is a technical fact of life; it has no broader policy significance.

It is true that for some time (before the new distortions that will be induced by legislation and regulation) the various monetary aggregates have in general been somewhat above the growth paths targeted for the year. I would also point out, though, that indications suggest an appreciable recent slowing in growth of both M2 and M3, and it so happens -- perhaps fortuitously -- that last week's M1 figure is very close to target. That is part of the setting of the discount rate change.

You may recall that, when reiterating our annual targets in July, I emphasized that "growth somewhat above the targeted ranges would be tolerated for a time in circumstances in which it appeared that precautionary or liquidity motivations, during a period of economic uncertainty and turbulence, were leading to stronger than anticipated demands for money. We will look to a variety of factors in reaching that judgment, including such technical factors as the behavior of different components in the money supply, the growth of credit, the behavior of banking and financial markets, and more broadly, the behavior of velocity and interest rates." I believe reasoned assessment of recent developments in the light of those factors does suggest that preferences for liquidity have generally been relatively strong, reflected in part in some abnormal pressures in parts of the private credit markets. In that light, the fact that some of the aggregates have tended to run somewhat above their target ranges has been fully acceptable to the Federal Open Market Committee.

I believe I can speak for all members of the Committee in saying that those judgments have been reached, and will continue to be reached, in full recognition of the need to maintain the heartening progress toward price stability.

BY DR. JAMES BARTH, DEPARTMENT OF ECONOMICS, GEORGE WASHINGTON UNIVERSITY AND STEPHEN MORRELL, FEDERAL RESERVE BANK OF ATLANTA

A Primer on Budget Deficits

During the past 20 years, the federal government budget has been in deficit 19 times, the only budget surplus occurring in 1969. Most current projections indicate that this trend will continue in the years ahead. In response to this situation, 31 state legislatures have already approved resolutions petitioning for a constitutional convention that would require an annually balanced budget. Similar resolutions are currently being considered by other state legislatures, with only three more needed to force the Congress to organize a constitutional convention to consider a balanced-budget amendment. Recently, President Reagan endorsed the idea of such an amendment. One amendment approved by the Senate early this month would permit a budget deficit only in wartime or when authorized by a three-fifths majority of the House and Senate.

This article is a primer on budget deficits. Section I defines what is meant by a budget deficit, how deficits are measured, and what is not included in conventional measures of the deficit. In Section II, we'll examine the U. S. budgetary record from the beginning of the Republic in 1789 to the present. Section III relates current concerns about budget deficits to parallel concerns expressed during the Great Depression—a period marked by significant changes in thinking about the effects of deficits. Section IV examines the major points of controversy about the economic impact of deficits.

What Is a Budget Deficit?

In any discussion of budget deficits, one must be sure to understand exactly what this term means. Most of the concern focuses on federal deficits, not the aggregate budgetary positions of local, state and federal governments. For this reason, we will consider only federal budgetary deficits here. At the federal level, the government collects taxes (T) out of which it spends on goods and services and provides for transfer payments (G) as well as pays interest on its outstanding debt (iB) (where i is the nominal interest rate and B is federal government debt outstanding). In recent years, government expenditures frequently have exceeded receipts, resulting in deficits. A deficit therefore occurs whenever expenditures exceed receipts and the size of the deficit is measured by the amount by which expenditures exceed receipts.

Symbolically, this situation may be expressed as:

$$(1)\ \text{Deficit} = G + iB - T.$$

Of course, government spending does not always exceed revenue. When the reverse is the case, the government budget is said to be in surplus. A balanced budget occurs whenever expenditures are exactly matched by receipts.

Naturally, deficits must be financed. There are two principal ways in which this is done, both of which involve an increase in government liabilities.[1] One way to finance deficits is through the sale of federal government securities to the public (both domestic and foreign) while the other way is through the sale of securities to the Federal Reserve. The Federal Reserve purchases securities, not directly from the Treasury Department, but rather through open market operations conducted through security dealers in the New York financial markets. When the Federal Reserve buys securi-

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[1] Decreases in government assets through the sale of such assets as gold, foreign exchange, buildings, equipment, and land constitute a third means of financing, but have occurred in sufficiently small amounts in recent years when compared to the size of the deficits that they can be safely omitted for the purposes of this paper. It should be pointed out, however, that in the May 12, 1982, issue of the **Washington Post** it was reported that the Reagan Administration "hopes to raise $18 billion over five years through the sale of 35 million acres of federal real estae, nearly 5 percent of what it now owns" (p. A22). From an historical viewpoint, it might be noted that "receipts from the sale of public lands were . . . of considerable importance" in completely eliminating the federal debt by January 1835. See Lewis H. Kimmel, **Federal Budget and Fiscal Policy 1789-1958**, The Brookings Institution, Washington, D.C., 1959, p. 315.

While controversy over budget deficits has raged since the Great Depression, the relationships between deficits and economic activity remain complex and puzzling. With debate intensifying under the pressure of high projected deficits, an understanding of the basic issues is essential.

ties, it results in an increase in its monetary liabilities, specifically reserves of commercial banks and thrift institutions plus coin and currency, or an increase in the monetary base. Since an increase in the monetary base typically increases the money supply, the sale of securities to the Federal Reserve to finance deficits is commonly referred to as money-financed deficits. Sales of securities to the public, on the other hand, are commonly referred to as bond-financed deficits.

Equation (1) may now be written as:

(2) $\text{Deficit} = \Delta B + \Delta M = G + iB - T$

where ΔB represents the positive change in bonds held by the public and ΔM represents the positive change in bonds held by the Federal Reserve.[2] This equation states that when government spending exceeds revenues, the resulting deficit must be bond - and/or money-financed. Most discussions of the federal deficit are based upon equation (2), which represents the nominal federal budget deficit. It should be noted that the widely reported figures on deficits in newspapers, magazines, and other news media are based upon the unified budget concept, not the national income accounts concept. The essential difference between the two concepts is that the former is on a cash basis, whereas the latter is on an accrual basis.[3]

An Alternative Measure of the Budget Deficit

The budget deficit as measured by equation (2) is not the only or, for that matter, the most appropriate measure available. An alternative measure that merits special attention is the real or inflation-adjusted deficit.[4] This measure of the deficit is given by:

(3) $\text{Real Deficit} = \Delta(B/P) + \Delta(M/P) = G/P + rB/P - \pi M/P - T/P,$

where P is the price level, r is the real rate of interest ($i - \pi$), and π is the inflation rate. This equation states that the amount by which real federal government expenditures exceed real revenues is financed by changes in the real value of government bonds and monetary liabililties.

A few comments about this measure of the deficit are appropriate. First, when there is no inflation ($\pi = 0$), one simply multiplies equation (3) by the price level (P) to obtain equation (2). Second, real interest payments on the federal debt are given by rB/P. This means that if inflation is fully anticipated and thus completely embodied in the nominal interest rate that the Treasury Department pays on federal government debt, then a higher inflation rate need not affect the real deficit. But, for this to happen, the nominal debt must increase along with the price level. Inflation would, therefore, increase the nominal deficit (see equation (2))

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[2] The B on the right-hand side of equation (2) is the same as the B on the left-hand side. In other words, federal expenditures on interest payments only include those made to the public. The reason is that "almost all interest received by the Federal Reserve holdings of debt have only a small effect on the budget surplus or deficit." See Special Analysis E, Borrowing and Debt, The Budget of the United States Government, 1983, Office of Management and Budget, Executive Office of the President, February 1982, p. 4. It should be pointed out that the revenue returned to the Treasury by the Federal Reserve System is included, in the national income accounts, as a part of corporate taxes. This, of course, overstates corporate taxes, particularly in high interest rate periods.

[3] More specifically, "the (unified) budget records receipts at the time the cash is collected regardless of when the income is earned and outlays (except interest paid to the public) are generally recorded at the time the checks are issued. The NIA (national income accounts) attempts to record most receipts from the business sector in the time period in which the income is earned rather than when taxes are actually paid, while personal income taxes and social insurance contributions are recorded at the time of payment by the individual taxpayer rather than when the liability is accrued or the cash is received by Treasury." See Special Analysis B, Federal Transactions in the National Income Accounts, The Budget of the United States Government, 1983, Office of Management and Budget Executive Office of the President, February 1982, p. 29.

[4] As one widely known economist states, "the relative long-run stability in the price level that prevailed before World War II has been replaced by a setting of chronic inflation. Accordingly, the examination of nominal debt data may be satisfactory for the pre-World War II period, but would not be useful after the war. Movements in nominal debt along with the price level, which merely maintains the real value of the outstanding debt, are inaccurately labeled as deficits in this analysis." See Robert J. Barro, "Comment from an Unreconstructed Ricardian," **Journal of Monetary Economics**, August 1978, p. 575. Also, see Brian Horrigan and Aris Protopapadakis, "Federal Deficits: A Faulty Gauge of Government's Impact on Financial Markets," **Business Review**, Federal Reserve Bank of Philadelphia, March-April 1982, pp. 3-16.

> "Inflation essentially acts as a tax on the government's monetary liabilities whether inflation is anticipated or not."

due to increased interest payments on debt outstanding (iB). Third, the real return on M/P is minus the inflation rate ($-\pi$), since the nominal rate of return on M is zero. Fourth, money-financed deficits that persist over time would continually increase the nominal deficit but could decrease the real deficit so long as M and P move together. Fifth, and most importantly, inflation essentially acts as a tax on the government's monetary liabilities whether it is anticipated or not: it also constitutes a tax on bond liabilities to the extent that the inflation is unanticipated. For this reason we should examine both nominal and real deficits, especially during periods of chronic inflation.

To illustrate the importance of adjusting for inflation, consider that the nominal deficit was nearly $60 billion in fiscal year 1980. Given that B was equal to $594 billion and M was equal to $157 billion in that year and that the inflation rate was 9 percent, one would have to subtract about $68 billion from the nominal deficit to obtain an inflation-adjusted deficit. Doing this, the result is that the fiscal year 1980 deficit becomes an $8 billion surplus.

Finally, rather than simply considering the size of federal deficits in isolation, it is frequently more informative to measure deficits relative to gross national product (GNP). In other words, it is useful to consider deficits (or surpluses) as a share of GNP. To illustrate the information this approach yields, consider the years 1968 and 1979. In the earlier year, the deficit was $25.2 billion, nearly the same as the 1979 deficit of $27.7 billion. When measured as a share of GNP, however, the situation is quite different. In 1968, the deficit amounted to 3 percent of GNP, whereas in 1979 the corresponding amount was only 1.2 percent. These figures demonstrate that financing the same size deficits may have far different implications depending upon the level of overall economic activity. Furthermore, as will be shown in the next section, the level of economic activity will significantly affect the size of the deficit. In short, to better understand deficits it is important to put them into perspective by expressing the deficits as a share of GNP.

What the Budget Deficit Doesn't Measure

It is important when discussing federal deficits to realize what they do not measure. Certainly, federal deficits as commonly known do not measure the change in the net worth of the federal government. In other words, although it may be conceptually sound to be interested ultimately in the federal government's net worth (assets less liabilities), such a measurement is extremely difficult to obtain. Valuing equipment, buildings, land, social security obligations, retirement benefits, and loan guarantees, to mention just a few assets and liabilities, would require a herculean effort.[5] One could even ask whether monetary liabilities actually exist, since there is no presumption that base money (reserves plus currency) will ever be retired. In any event, deficits should not be equated with dis-saving in the sense that the federal government's net worth is necessarily declining by the same amounts. The widely reported measures of the budget deficit are far narrower in scope.[6]

Another factor is that the federal deficit does not include the activities of off-budget federal entities such as the Federal Financing Bank, Synthetic Fuels Corporation, and the Postal Service fund.[7] Off-budget entity activities do not show up in the unified budget spending and thus the deficit figures. This means, of course, that off-budget spending does not go through the normal congressional process.[8] In 1973, when off-budget federal entity outlays began, the federal deficit was $14.9 billion when these entities were included. Excluding them reduced the deficit only to $14.8 billion. However, by 1981, the situation was vastly different. The federal deficit was $57.9 billion excluding these entities. But it jumps to $78.9 billion when they are included. Clearly, the exclusion of off-budget entities understates the size of the deficit and thus the magnitude of borrowing undertaken by the federal government.[9]

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[5] Such a herculean effort has been recently undertaken by Robert Eisner and Paul Pieper, "Government Net Worth: Assets, Liabilities, and Revaluations." Some of their estimates are presented in the **Economic Report of the President**, U.S. Government Printing Office (1982).

[6] Clearly, if government deficits are hypothesized to affect economic variables, one must be sure to use an appropriate measure to the deficit when performing empirical tests. For more detailed discussions of some of these issues, see the **Economic Report of the President**, February 1982, pp. 102-108, and Rudolph G. Penner, "How Much is Owed by the Federal Government?", American Enterprise Institute, undated mimeo.

[7] For an extremely readable and informative discussion of off-budget entities at the federal as well as state and local levels of government, see James T. Bennett and Thomas J. DiLorenzo, "How the Government Evades Taxes," **Policy Review**, Winter 1982, pp.71-89. Also, see David H. Resler and Richard W. Lang, "Federal Agency Debt: Another Side of Federal Borrowing," Federal Reserve Bank of St. Louis **Review**, November 1979, pp. 10-19, and **Federal Credit Activities: An Overview of the President's Credit Budget for Fiscal Year 1983**, Congressional Budget Office, Staff Working Paper, March 1982.

In addition, almost all of the talk about budget deficits refers to the federal deficit, yet not all government borrowing in the credit markets is done by the federal government. State and local governments also borrow in the credit markets. They may also, of course, purchase federal government securities. Thus, when assessing the impact of government borrowing on the competition for loanable funds between the public and private sectors, one should properly consider total borrowing (net of intergovernmental transactions) by all levels of government, not just federal borrowing.

The Federal Budgetary Record

To put the concern over budget deficits into better perspective, it is useful to review the federal budgetary record. From the establishment of the U. S. Treasury in 1789 through 1981, there have been 191 budgets.[10] During this long period, the record shows that there have been 88 deficits and 103 surpluses (see the Appendix for a partial listing of the actual data).

Such a long period, however, may obscure important changes in budgeting behavior. The period is therefore broken down into two subperiods, 1789 to 1930 and 1931 to 1981. The reason for this particular split is that, as Lewis Kimmel has stated, "... at no time prior to the 1930s were public expenditures used deliberately and consciously as a balancing factor; there was little or no evidence of a conscious fiscal policy in the modern sense of the term."[11] Subsequent to the 1930s, however, fiscal policy became increasingly viewed as a tool for smoothing cyclical fluctuations in economic activity.

During the 140 years from 1789 to 1930, there were 45 deficits. This means, of course, that there were 95 surpluses. In short, during the first 140 years of U. S. history the budget was in the red 32 percent of the time. The budgetary record for the more recent 1931 to 1981 subperiod, however, is quite different. In almost one-third fewer years (51), there were nearly as many deficits (43). Surpluses occurred only eight times. In other words, the past half century saw deficits 84 percent of the time.

The situation for the past 32 years is even more striking. Since 1950, there have been 27 deficits and only five surpluses, the most recent one in 1969. The largest deficit on record occurred during this period—$66.4 **billion** in 1976. This compares to the first budget deficit of $1.4 **million** in 1792.

The entire budgetary record is presented graphically in chart 1, which shows that there are clearly periods in which deficits as a share of GNP have tended to skyrocket. What is striking, however, is that the largest deficits always have occurred during war periods. In fact, the record is that of the 88 deficits during the past 191 years, 30 of these occurred during war years. Omitting

Editor's Note:
This article is based on federal budget data from 1789-1981 which, as far as we know, have never been compiled in a single source before. While the complete Appendix table is too bulky to reproduce in this article, it is available upon request from the authors.

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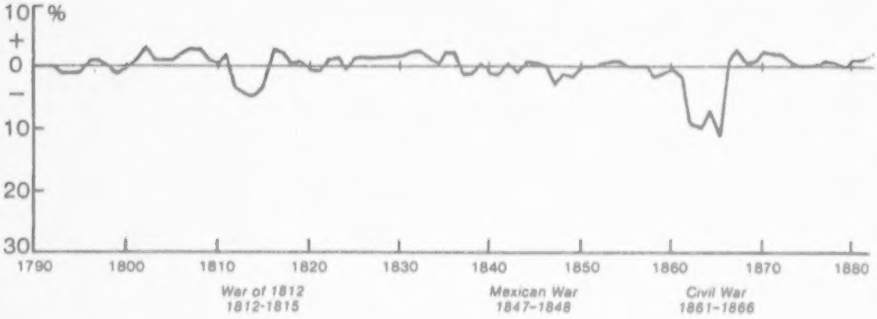
[8] Senator John Heinz recently introduced legislation to move Social Security off-budget largely due to the protracted debate over the fiscal year 1983 budget.

[9] Of course, it should be noted that some federal debt is acquired by federal agencies. Specifically, "total agency holdings of Federal securities will reach an estimated $237 billion by the end of 1983. This will comprise 19 percent of the gross federal debt." See Special Analysis E, Borrowing and Debt, The Budget of the United States Government, 1983, Office of Management and Budget, Executive Office of the President, February 1982, p. 20.

[10] Interestingly enough, as Lewis Kimmel points out, "the federal government has operated under a budget, properly so-called, only since 1921 ..." See Federal Budget and Fiscal Policy, 1789-1958, The Brookings Institution, Washington, D.C., 1959, p. 2.

[11] Ibid., p. 6.

Chart 1. Unified Federal Budget Surplus or Deficit as a Percentage of GNP from 1789 - 1981



war years, then, one finds that there were 103 surpluses versus 58 deficits since the first U. S. budget. Of course, depressions and recessions, by reducing revenues and stimulating expenditures, also are associated with deficits. The largest peacetime deficit occurred during the Great Depression of the 1930s.

Given that there were so many surpluses during U. S. history, it is important to understand their purpose.[12] Basically, surpluses are intended to reduce, and ultimately to retire, federal debt outstanding. As chart 2 shows, this goal has been largely accomplished. As may be seen, wars caused federal debt as a share of GNP to rise sharply. However, after the wars, federal debt fell rather steadily. The same pattern emerged for severe recessions, such as the Great Depression of the 1930s. Also, notice that federal debt was essentially eliminated during the 1830s.

As chart 2 dramatically shows, contrary to what people may believe, the federal debt has not grown without limit. On the basis of the historical record, there was every reason to believe that eventually it would be paid off. Only in the last few years has the federal debt leveled off. What will happen in future years, of course, is very uncertain. This uncertainty, in turn, affects financial markets in ways that are not fully understood. More will be said about this in subsequent sections.

Budget Deficits and the Great Depression

The current concern about federal deficits is reminiscent of the concern expressed during the Great Depression.[13] Prior to the 1930s it was widely believed that a balanced budget was "the principal test of sound fiscal management."[14] As the previous section demonstrated, surpluses

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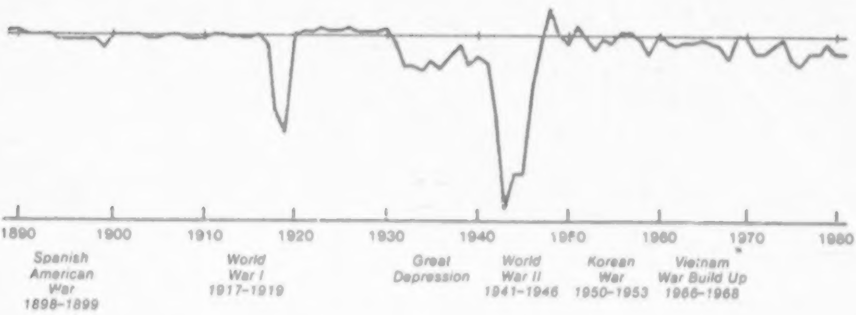
[12] In view of all the controversy over budget deficits, it is interesting to note that budget surpluses during the 1880s also created problems and controversy. See **Ibid.**, pp.70-75.

[13] Interestingly enough, when the unemployment rate rose to 9.4 percent in April of 1982, the headline of the May 8 1982 issue of the **Washington Post** read "Unemployment Worst Since Great Depression."

[14] See Lewis H. Kimmel, **Federal Budget and Fiscal Policy, 1789-1958**, The Brookings Institution, Washington, D.C., 1959, p. 143. The material in this section is based entirely upon Kimmel's fascinating account of U.S. budget policy.



were the rule, not the exception. When deficits did occur, it was mainly due to wars. But following the wars, surpluses were typically accumulated so that outstanding federal debt could be retired. During the 1930s, however, something quite different happened. For the first time in U. S. history, the nation incurred 10 successive peacetime deficits.

On December 2, 1929, approximately six weeks after the collapse of the stock market, President Hoover submitted his budget for 1931 to the Congress. There was no indication in this budget nor any direct admission during the following year that large and continual deficits were looming. Indeed, "even the 1932 budget released in December 1930 indicated surpluses for the fiscal years 1931 and 1932."[15] This situation did not last long, however. "As the depression deepened, it became apparent that the budget estimates had been far too optimistic and that the Treasury would soon be faced with larger deficits than any previously incurred in time of peace."[16]

Despite the depression, a balanced budget was considered to be an essential condition for recovery. "A balanced budget was regarded as a prerequisite for a revival of business confidence."[17] Moreover, "federal borrowing was viewed as competitive with business and other private borrowing; interest rates were higher because of federal competition for loan funds."[18] Lastly, an "unbalanced federal budget was equated with inflation."[19] Thus, it is no surprise that in the early 1930s "the President (Hoover), officials of the executive branch, and the leadership of both parties in Congress" united in "making a balanced budget the primary policy goal."[20]

Interestingly enough, throughout the early years of the depression, it was frequently asserted that heavy or excessive tax burdens were a major reason for, if not the sole cause of, the "unsatisfactory economic situation."[21] Despite this view, however, tax reductions were not regarded as a viable option. Instead,

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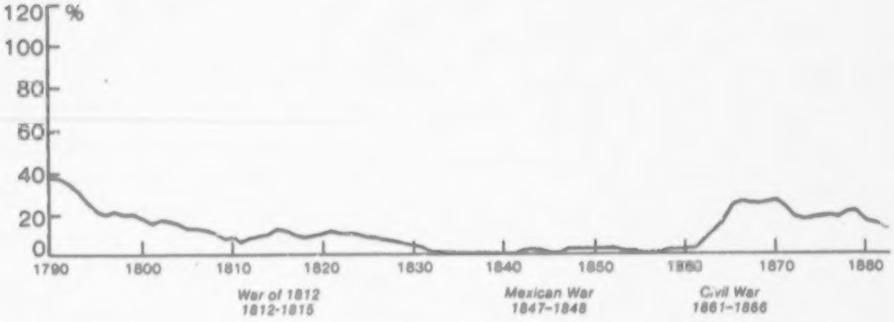
[15] Ibid., p. 145.
[16] Ibid., p. 146.
[17] Ibid., p. 152.
[18] Ibid., p. 152.
[19] Ibid., p. 152.
[20] Ibid., p. 153.
[21] Ibid., p. 164.

Chart 2. Public Debt as a Percentage of GNP from 1789 – 1981



a balanced budget achieved primarily through rigorous expenditure control was the primary goal."[22]

During the 1932 presidential campaign, "the Democratic party became the self-appointed champion of what was accepted as fiscal conservatism."[23] In this role, the Democrats "made the most of the 'recklessness' of those who would tolerate continued unbalance in the federal accounts."[24] With the election of President Roosevelt, however, the campaign rhetoric faded fast. By the time of the budget message of January 5, 1937, in contrast to the first budget message "which promised a balanced budget in the third year of recovery," "... a fully balanced budget was now assured only in the indefinite but apparently not-too-distant future."[25] Instead of balancing the budget, very early on in the Roosevelt administration "restoring the economy, which above all else required a reduction in unemployment to a reasonable minimum, became a primary objective of public policy."[26] Indeed, "on numerous occasions the President stated that government was responsible for providing for the unemployed and the needy."[27] While doing this, however, "it was held that these and other governmental expenditures would contribute to rising income levels and increases in private employment."[28]

The above quotations from the period of the Great Depression support the view that economic views often repeat themselves. Much of the current controversy and concern over budget deficits is remarkably similar to that which surfaced a half century ago. Apart from this, the Great Depression demonstrated to many individuals that sharp contractions in economic activity can cause huge deficits. Eventually, this realization led to the development of the concept of a full employment budget deficit.[29] Rather than simply relying only on the reported federal deficit figures,

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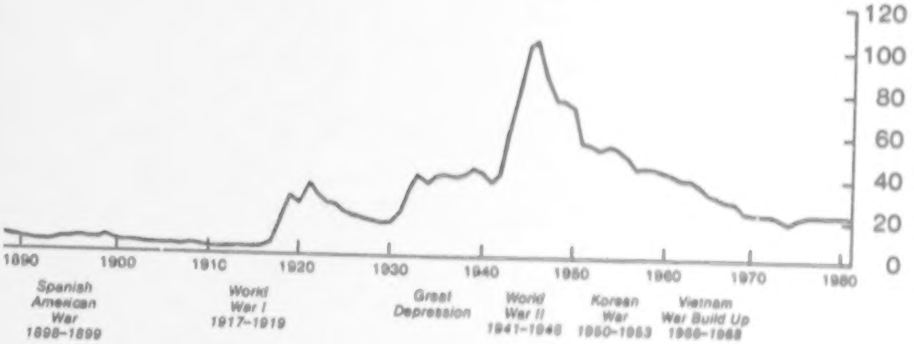
[22] Ibid., p. 185.
[23] Ibid., p. 186.
[24] Ibid., p. 186-187.
[25] Ibid., p. 182.
[26] Ibid., p. 182.
[27] Ibid., p. 188.
[28] Ibid., p. 188.
[29] See David H. Resler and Richard W. Lang, "Federal Agency Debt: Another Side of Federal Borrowing," Federal Reserve Bank of St. Louis Review,



the notion was that one should calculate what the budget deficit (or surplus) would be if the economy were operating at full or a high level of employment. On a full employment basis, for example, during the spring and summer of 1981, the federal budget was in surplus, not in deficit. Some interpret this as a sign that fiscal policy was, if anything, contractionary during this recessionary period.

Why All the Concern Over Budget Deficits?

Why is there such widespread concern over federal budgetary deficits?[30] Or, more to the point, do budget deficits really matter? Unfortunately, determining the economic impact of deficits is very controversial. It is an area where there are widely differing points of view.[31] Some economists, for example, state that "bigger deficits, if allowed to accumulate, have evil consequences of their own; either more inflation, or more government borrowing from private lenders, which in turn means less chance for private firms to borrow funds needed for capital improvements and expansion."[32] Others say "an increase in the budget deficit ... does not necessarily mean either a crowding out of private investment or an accentuation of

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November 1979, pp.16-19, and Alan S. Blinder and Robert M. Solow, "Analytical Foundations of Fiscal Policy," in **The Economics of Public Finance**, The Brookings Institution, Washington, D.C., 1974, pp. 3-115.

[30] The current concern, of course, centers on President Reagan's budget proposals. For a discussion of the Reagan economic program as well as a comparison with policies over the last 30 years, see James R. Barth, "The Reagan Program for Economic Recovery: An Historical Perspective," this **Review**, October 1981, pp. 14-25. The rationale for "Reaganomics" or "supply-side" economics is found in James R. Barth, "The Reagan Program for Economic Recovery: Economic Rationale (A Primer on Supply-Side Economics)," this **Review**, September 1981, pp. 4-14. Also, see John A Tatom, "We are All Supply-Siders Now!", Federal Reserve Bank of St. Louis **Review**, May 1981 pp. 18-30, and James R. Barth and Joseph J. Cordes, "Supply-Side Economics: Political Claims vs. Economic Reality," **Journal of Studies in the Social Sciences**, forthcoming.

[31] Deficits, however, only represent part of a broader area of controversy within macroeconomics. To illustrate, consider the following quotes: (1) "Supply-side economics, currently the most popular counter-revolution, is also the most amorphous. Without a Keynes or Friedman or Lucas, it lacks a sacred text expounding its theoretical foundations. It is more spirit, attitude, and ideology than coherent doctrine, and its enthusiasts are of many minds." See James Tobin, "Supply-Side Economics: What is It. Will It Work?", **Economic Outlook USA**, Summer 1981, p. 51; (2) "Keynesian economics is dead . . . At research seminars, people don't take Keynesian theorizing seriously anymore; the audience starts to whisper and giggle to one another." Also, "crackpot proposals like the . . . Roth-Kemp bills (multi-year tax cuts) get attention along with serious ones . . ." See Robert E. Lucas, Jr., "The Death of Keynes," in **Viewpoints on Supply-Side Economics**, Thomas J. Hailstones, ed., Robert F. Dame, Inc., Richmond, 1982, pp. 3 and 5, respectively; and (3) "The rational expectations hypothesis is a statement

inflationary pressure."[33] To understand the potential economic impact of budget deficits, we will discuss the rationale underlying such different views.

As discussed earlier, federal deficits may be bond-financed and/or money-financed. There is broad agreement that money-financed deficits do indeed increase aggregate demand, push prices higher, and drive up the nominal, if not real, rate of interest. The monetization of deficits, in other words, is generally considered to be inflationary. To the extent that the inflation is anticipated, nominal interest rates, in turn, will be higher insofar as they embody an inflation premium, particularly long-term rates of interest. As far as crowding out (that is, the decline in interest-sensitive private investment and durable goods spending due to big deficits) is concerned, there should be none. Money-financed deficits are likely to leave the real rate of interest unaffected or, if affected, cause it to decline.

But how can one be sure that budget deficits will not be money-financed? Since the Federal Reserve is independent of the Treasury Department, there is no requirement that it purchase federal securities whenever there is a deficit. If the Federal Reserve so decides, deficits may be completely bond-financed. Historically, this has not been the case. On the other hand, the record does not demonstrate that deficits are completely money-financed, either. What appears to be the case is that the Federal Reserve monetizes a varying fraction of budget deficits. Even when the Federal Reserve monetizes a portion of the deficit, however, it doesn't necessarily mean that the money stock increases one-for-one with the deficit. For example, the deficit was $3.8 billion in 1962. This deficit became a surplus of $0.7 billion in 1963. At the same time, money growth (M1) more than doubled, from a rate of 1.8 percent in 1962 to 4.0 percent in 1963. An even more striking example occurred during the 1974-75 period. In 1974, the deficit was $4.7 billion. The deficit ballooned to $63.8 billion in 1975. Money growth, however, remained relatively constant, growing at a rate of 4.9 percent in 1975 as compared to a rate of 4.7 percent in 1974.

> "In general, movements in money do not track movements in budget deficits one-for-one."

In general, movements in money do not track movements in budget deficits one-for-one. Whether the movements are much closer once we adjust for the level of economic activity (so as to distinguish between "passive" and "active" deficits) is another matter. The evidence relating to whether deficits in the past have led to faster money growth and, thus, inflation appears to be somewhat mixed.[34] In any event, regardless of what has happened in the past, the Federal Reserve is in a strong position to prevent future deficits from becoming inflationary.

More controversial is the case of bond-financed deficits, in which deficits are financed

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of tautological probabilities that can be imposed on a model but not tested. Even in cases where the rational expectations hypothesis is imposed, the model may not be identifiable unless certain a priori conditions, neglected in previous econometric discussions of rational expectations, are assumed." See P.A.V.B. Swamy, J. R. Barth, and P. A. Tinsley, "The Rational Expectations Approach to Economic Modeling," Special Studies Paper No. 143, Federal Reserve Board, July 1980, and *Journal of Economic Dynamics and Control* May 1982, pp. 125-147.

[32] See Carl F. Christ and Alan A. Walters, "The Mythology of Tax Cuts," *Policy Review*, Spring 1981, p.86.

[33] See David Ratsis, "Norman B. True on Supply-Side Economics," in *Viewpoints on Supply-Side Economics*, Thomas J. Hailstones, ed., Robert F. Dame, Inc., Richmond, 1982, p.65.

[34] M. J. Hamburger and B. Zwick, for example, find that throughout most of the 1960s and 1970s larger federal deficits were accommodated by faster monetary growth. See "Deficits, Money and Inflation," *Journal of Monetary Economics*, January 1981. Also, Scott H. Hein states that "only when monetary authorities attempt to prevent interest rates from rising will federal deficits lead to increases in the money stock and, subsequently, inflation." He goes on to say that "this link was apparently important from 1955 through early 1975 ... more recently, however, the link appears to have been broken . . ." See "Deficits and Inflation," Federal Reserve Bank of St. Louis *Review*, March 1981, p. 10. Robert J. Barro, however, states that "the principal link from the federal budget to money creation in recent U.S. experience involves departures of federal spending from normal—especially the positive response to wartime spending and the negative reaction to post-war spending cuts—rather than the surplus position (or the level of federal spending), per se." See "Comment from an Unreconstructed Ricardian," *Journal of Monetary Economics*, August 1978, p. 570. For a more general discussion of the reaction of the Federal Reserve to various economic variables, see James R. Barth, Robin Sickles, and Philip Wiest, "Assessing the Impact of Varying Economic Conditions on Federal Reserve Behavior," *Journal of Macroeconomics*, Winter 1982 and the references cited therein.

through the sale of securities to the public. The crucial issue here is whether the bonds that are sold increase aggregate demand and thus drive up prices as well as increase the real rate of interest. Output effects may also occur which, via an "acceleration mechanism", can temporarily offset any reduction in interest-sensitive components of real aggregate demand. Some economists contend that government bonds are properly considered as a component of private wealth. According to this view, bond-financed deficits will therefore increase wealth which, in turn, will stimulate consumption and the demand for money. Increased consumption and money demand will lead to a higher real rate of interest. This, they argue, will generate crowding out as investment in plant and equipment and purchases of consumer durables decline due to higher real interest rates. If interest rates rise sufficiently, there will be complete crowding out, which means that the bond-financed deficit will not increase aggregate demand and thus prices. Although the deficits will not be inflationary in this more extreme situation, they will still drive up real interest rates and thus generate crowding out.[35]

Other economists disagree with this scenario. They contend that government bonds do not represent net wealth.[36] According to this view, there are no wealth effects associated with bond-financed deficits. Proponents argue that people realize the bonds issued will pay interest and will eventually be retired. This means that issuance of bonds implies an offsetting future tax liability to cover the interest payments and principal. To meet this future tax liability, the public will save more. This means that the federal deficit (government dis-saving) will be matched exactly by an increase in private saving. In this case, there will be no increase in aggregate demand and thus no increase in prices.[37] Furthermore, the increase in private saving to match the budget deficit means that the deficit will not siphon funds away from private investment. In short, real interest rates will be unaffected and, as a result, there will be no crowding out.

Still another view of bond-financed deficits maintains that cuts in tax rates (particularly marginal tax rates), will increase the after-tax rate of return to saving. As a result, it is argued that tax-induced deficits will stimulate a greater amount of saving. If stimulated sufficiently, this additional saving will be available to purchase the government bonds that are sold to finance the deficit. In this way, there need not be any crowding out or increased inflationary pressure.[38] The increase in saving will prevent aggregate demand from rising and will provide the additional funds to keep real interest rates from moving upward.

> "Deficits caused by increased federal spending are likely to be more inflationary and generate more crowding out than those caused by cuts in marginal tax rates."

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[35] Once again, the empirical evidence appears to be mixed. Otto Eckstein and Christopher Probyn, for example, state that "the failure to achieve an average of balance in the budget reduces the growth of the economy's ability to produce and worsens inflation." They go on to say that "the principal mechanisms are the effects of deficits on interest rates and the crowding out of private financing, which, in turn, reduces investment spending . . ." See "Do Budget Deficits Matter?" Data Resources U.S. Review, December 1981, p. 1 and 15. Lawrence A. Kudlow also reports results showing that "increased federal borrowing raises interest rates and inflation and ultimately inhibits the growth of output." See "Statement of Lawrence A. Kudlow, Assistant Director for Economic Policy, Office of Management and Budget before the Senate Budget Committee, October 20, 1981, Statistical Appendix, p. I. Gerald P. Dwyer, Jr., on the other hand, reports that "no evidence is found that larger government deficits increase prices, spending, interest rates, or the money stock." Economic Inquiry, forthcoming, p. 18.

[36] See Robert J. Barro, "Are Government Bonds Net Wealth?" Journal of Political Economy, November/December 1974, pp. 1095-1117.

[37] Preston J. Miller, among others, questions the ultra-rationality hypothesis, however. He argues that since the government has run so many deficits during the past 20 years, "few people expect the government to retire its debt." As a result, "because the bonds are not likely to be paid off by higher taxes in the future, they are merely promises to deliver currency in the future." He goes on to say that "in fact, they are really much like currency." Thus, "when bonds are almost identical to money, any change in policy that increases the deficit is inflationary." See Quarterly Review, Federal Reserve Bank of Minneapolis, Summer 1980, p. 2.

[38] Paul Craig Roberts states for example, that "savings, of course, represent the supply of funds in financial markets. So deficits caused by tax rate cuts add to the supply of funds as well as to the demand for funds. This allows the deficit to be financed without pressure on interest rates and money creation. There is no need to monetize the deficit and thus no inflationary effect." See "The Economic Case for Kemp-Roth," The Wall Street Journal, August 1, 1978.

We can probably safely draw the following conclusions.[39] First, if anything, deficits caused by increased federal spending are likely to be more inflationary and generate more crowding out than those caused by cuts in marginal tax rates.[40] Second, money-financed deficits are more likely to be inflationary but less likely to generate crowding out than are bond-financed deficits. Third, deficits that persist and grow (both absolutely and as a share of GNP) during peacetime, nonrecessionary periods are more likely to be inflationary and lead to crowding out, regardless of how they are financed. Fifth, as should perhaps now be clear, attempting to predict the impacts of government spending and tax rate changes on the economy is an extremely difficult task, especially if it is not clear whether the changes are temporary or permanent.[41] For this and related reasons, a sensible budget policy may be to set government spending and tax rates so as to balance the budget not every year but over the course of a business cycle. In this way, deficits could occur with wars and recessions, while surpluses could occur during cyclically expansionary periods.

The Budgetary Bottom Line

Despite the fact that budget deficits may not always be painful economically, they always seem to be painful politically. This is a case in which perceptions may be more important than reality. So whether the economic issues as discussed above are fully understood or not, in such a situation, deficits do indeed matter. If the Congress perceives that federal deficits are harmful—politically and/or economically—it surely will take steps to eliminate them. The issue then becomes whether the resulting actions are more harmful to the economy than the deficits would have been.

—James R. Barth
and Stephen O. Morrell

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[39] For a more detailed analysis of the views of Keynesians, Monetarists, Rational Expectationists, and Supply-Siders regarding fiscal and monetary policies, see James R. Barth, "The Costs of Slowing Inflation: Four Views," this Review, January 1982, pp. 39—49. Also, for an interesting analysis of the interactions between the monetary and fiscal authorities when there is a deficit and their implications for inflation, see Thomas J. Sargent and Neil Wallace, "Some Unpleasant Monetarist Arithmetic," **Quarterly Review**, Federal Reserve Board of Minneapolis, Fall 1981, pp. 1-17.

[40] In this regard, see Vito Tanzi and George Iden, "The Impact of Taxes on Wages in the United States: An Example of Supply-Side Economics?" Fiscal Affairs Department, International Monetary Fund, April 7, 1981 (mimeo).

[41] It should also be noted that nothing thus far has been said about allocative effects due to deficits. For a discussion of some of the allocative effects associated with tax cuts, see James R. Barth and Joseph J. Cordes, "Industrial Impacts of the 1981 Business Tax Cuts," this Review, May 1982.

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Appendix

Year	Unified Federal Budget Surplus or Deficit	Public Holdings of Federal Debt	Nominal GNP	Unified Federal Budget Surplus or Deficit as a Share of GNP	Public Holdings of Federal Debt as a Share of GNP
	($ millions)	($ millions)	($ millions)	(millions)	(millions)
1789	.150	0.000	174.000	.09	0.00
1790	.150	75.464	198.000	.08	38.11
1810	1.228	58.006	650.000	.19	8.92
1830	9.701	39.123	1053.000	.92	3.72
1850	4.060	63.453	2556.000	.16	2.43
1870	101.602	2035.881	8392.000	1.21	24.26
*890	85.040	711.313	13100.000	.65	5.43
1910	−18.105	913.318	35400.000	−.05	2.58
1930	738.000	15158.000	90700.000	.81	16.71
1950	−3112.000	200692.000	286457.000	−1.09	70.06
1970	−2845.000	227166.000	968800.00	−.29	23.45
1980	−59563.000	594259.000	2567500.000	−2.32	23.15
1981	−57932.000	669968.000	2858600.000	−2.03	23.44

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*Complete annual data for 1789-1981 available from authors.

Sources: A. Federal Budget Surplus or Deficit—1789 to 1920. Table 2. Receipts and Outlays. Statistical Appendix to Annual Report of The Secretary of the Treasury on the State of the Finances, Fiscal Year 1980, U.S. Government Printing Office, Washington, D.C., and 1921 to 1981, Table 23, Budget Receipts and Outlays. Budget of the United States Government, Fiscal Year 1983, U.S. Government Printing Office, Washington, D.C.

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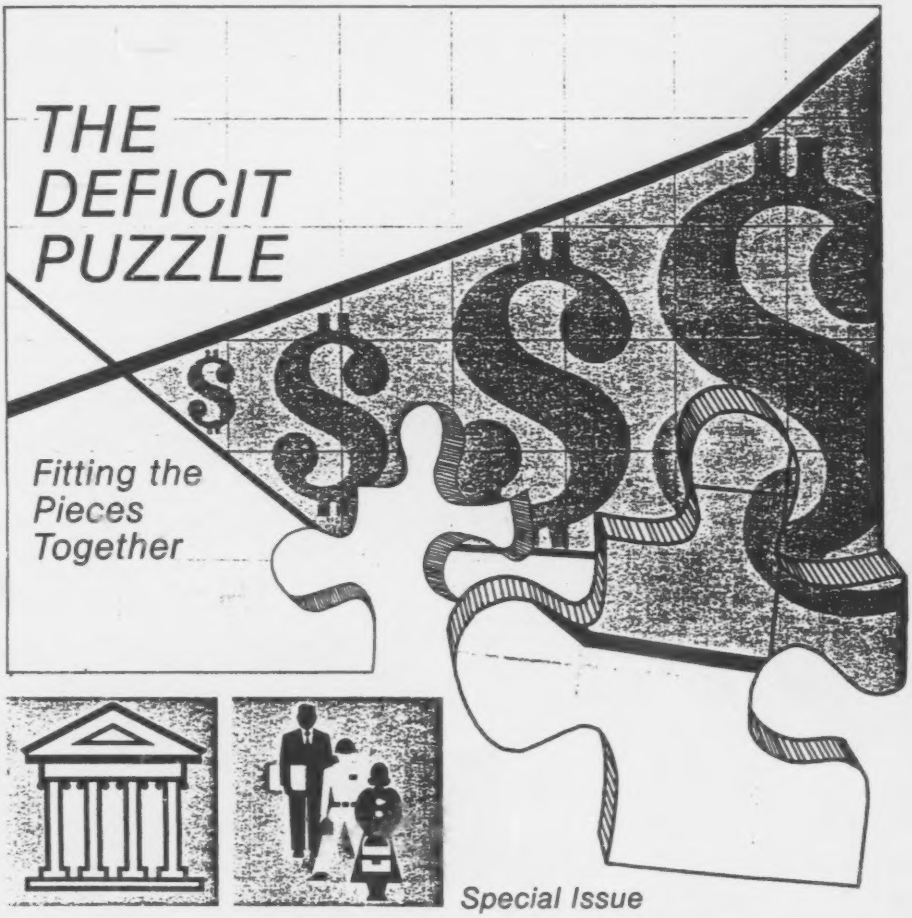
Economic Review

FEDERAL RESERVE BANK OF ATLANTA AUGUST 1982

THE DEFICIT PUZZLE

Fitting the Pieces Together



Special Issue

THE VOICES OF "FAILURE" AND THE FAILURE OF MONETARY POLICY-MAKING

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and
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I. THE VOICES OF FAILURE

Almost three years ago the Federal Reserve Authorities announced a major change in monetary policy. The events prompting this decision are well known. The basic inflation rate drifted from the early 60's to the late 70's in response to an essentially accommodating policy from a negligible level to around 8 percent p.a. The consequences were most dramatically revealed by a series of crises on the foreign exchange market. The Federal Reserve authorities recognized in October 1979 that monetary policy need be designed more effectively (or willingly) to lower inflation and support the dollar. A new tactical procedure was initiated for this purpose. The operational change was expected to tighten control over monetary growth and prevent the inflationary drift experienced in previous years.

The passage of time since October 1979 offers some perspective about the nature of the policy introduced, its mode of execution and consequences. Some success should be clearly recognized. Monetary growth was effectively lowered (in the average) over the past three years. Inflation responded moreover to the broad change in monetary affairs. The rate of change in the price-level and the momentum of wage settlements was substantially reduced over the past years.

This progress was accompanied however by economic stagnation and recession. Real national product fluctuated since 1979 within an interval of about 3-4 percent around an approximately stationary level. The economy slid moreover into a recession not recognized by the official forecasts supplied by the Administration in the early months of 1981. The emerging doubts and questions bearing on the course of policy deepened and widened with the manifest disarray of financial markets. Since early 1980, interest rates attained a remarkably high level (in the average) and exhibited a singular variability. The record traced in recent years by the financial markets is unique in the peace time history of the USA. The behavior of interest rates threatens moreover the survival of many financial institutions and has aggrevated in recent months an increasingly fragile network of international credit relations. The uncertainty gripping the financial markets seems to envelop both financial institutions and some governments with a comparatively large exposure to short-term liabilities.

Progress in any particular dimension seems hardly worth any notice in the media or political market. This market thrives on "crises" and "problems". The recession with the uncertain prospects of recovery, and most particularly the disarray expressed on financial markets, affected the public debate about the future course of policy. "Liberal" and "neo-conservative" commentators, including some Federal Reserve officials, emphatically declared the massive failure of the monetary policy pursued by the Fed. They urged the Federal Reserve Authorities to abandon what was deemed to be their "monetarist bias". An "alternative policy" could be expected to lower interest rates permanently, reduce their variability and assure a sustained recovery.

The "voices of failure" offered neither adequate articulation of events nor an acceptable explanation of the apparent failure. Their basic thrust would push the Fed once again into a dominantly accommodating stance with the prospect of permanent and increasing inflation. Their attention thoroughly misses moreover the crucial short-term and long-term aspects of our monetary policymaking associated with the observed failure.

II. THE NATURE OF THE "FAILURE"

1. The Interest Rate Syndrome

The singular behavior of interest rates emerged shortly after the change in the Fed's operating procedure. The public announcement of the change suggested that the Fed would assign "less significance" to interest rates and attend more explicitly to a control over monetary growth. A prevalent analysis enshrined in many textbooks on macro-economics informs us that such changes in policy procedures affect the relative variability of monetary growth and interest rates. This approach yields a trade-off between the variability of the two magnitudes. The strategy of interest control, or even the tactical (i.e. instrumental) use of interest rates (more precisely: of the federal funds rate) for monetary control, lowers the short-run variability of interest rates and raises on the other hand the variability of monetary growth. The observed behavior of interest rates appears thus, according to this story, to be the natural consequence of a shift from a dominant pattern of "interest rate control" in one form or another to a more developed stance of monetary control.

A number of studies prepared at the Board of Governors of the Federal Reserve System and at some of the regional Federal Reserve Banks articulate the explanation in more detail. One version emphasizes that the change in operating procedure generated misapprehension and confusion around the financial markets. Other studies demonstrate a statistical connection between the variability of monetary growth and the variability of short-term interest rates. This connection was attributed to the change in operating procedures. The financial market expected under a policy of monetary control a dominant pattern of "regressive behavior" by the Fed. Unanticipated and substantial deviations of monetary growth from the target path were expected to induce corresponding adjustments in the Fed's reserve operations. Positive surprises in monetary growth increase and negative surprises lower under the circumstances short-term interest rates. The operation of the connection depends sensitively on the financial markets' confidence that the Fed is really committed to a policy of monetary control.

Some of the arguments and studies advanced contribute usefully to our information about the relation between monetary policymaking and financial markets. None provides however an acceptable explanation of the observed behavior of interest rates. Three major facts must be recognized in this context. One refers to the level and variability of interest rates over all maturities.* The second involves the remarkable correlation between interest rates over the whole yield curve. The singular variability exhibited substantial co-movements between short- and long-term interest rates. Lastly, the short-run variability of monetary growth did not decline after the change in operating procedure. It actually increased somewhat.

These patterns cannot be explained by the observed connection between short-run "monetary surprises" and subsequent movements in short-term interest rates. Rational market expectations operating under a system of monetary control are not sufficient to produce the particular connection. The tactical procedure used in the context of lagged reserve accounting contributed probably to the joint increase in the (short-run) variability of short-term interest rates and of monetary growth.

Whatever the role of "institutional policy" may be, the occurrence of monetary surprises under a system of monetary control cannot explain the failure lamented in the media. The effect of monetary surprises depends critically on the market's expectation that such surprises will be systematically corrected. Surprises are thus, according to this account, essentially interpreted as transitory events and will not affect the behavior of intermediate and long-term interest rates. This account thus implies that the change in operating procedure raises the shortest-run variability of short-term interest rates with negligible effect on the variability of longer term interest rates. A confident expectation of anti-inflationary monetary control would moreover lower the inflation premium and decrease long term rates. These implications are not reconcilable with the three major facts mentioned above.

The trade-off hypothesis based on standard textbook analysis encounters the same difficulties. It systematically neglects all aspects of the term structure of interest rates. This neglect omits an essential mechanism yielding crucial information about the market's assessment of montetary policymaking. A prevalent conviction that the Fed will maintain an effective anti-inflationary monetary control does not raise the variability of all interest rates and would not produce the co-movements observed. We may also note in passing that this strand of analysis neglects with the term structure also the interaction between an array of asset markets. Interpretations based on this analysis, typically represented by frequent statements made by Federal Reserve officials, systematically equate all the stochastic shocks operating around the complex of financial markets to the disturbances or shifts in money demand. The diverse shocks are however not equivalent with respect to their economic effects under alternative strategies (i.e. monetary or interest controls). Arguments based on the trade-off analysis usually postulate moreover that money demand is perturbed by purely transitory shocks. Once again, this postulate yields implications very different from the pattern observed.

We conclude that the "failure" manifested by the behavior of interest rates cannot be attributed to a change in monetary regime per se. In particular, it cannot be explained in terms of a shift from an "essentially flexible" interest strategy to a system of effective monetary control. It is not the confusion and misapprehension produced just by a change in strategy or tactics which produced the "failure syndrome". This syndrome was dominated by the behavior of our monetary authorities, most particularly by an uncertain sense of commitment to an anti-inflationary policy with a corresponding strategy of monetary control conveyed to a broad public. A long tradition of misleading statements, a sequence of broken promises to pursue anti-inflationary policies, the many contradictions observed between statements made by Fed officials since October 6, 1979, a more or less veiled opposition of important Fed officials to a policy of effective monetary control, and lastly, the variability of monetary growth after the promise offered in October 1979 to tighten control and improve performance, all contributed to a diffuse and pervasive uncertainty about the trend in monetary policymaking. The array of experiences imposed on financial markets lowered the credibility of the Fed's monetary strategy. The resulting uncertainty imposed a substantial risk premium of several percentage points on the gross real rate of interest. It was also expressed by cross currents of reassessments and re-reassessments of accruing information about future policies and thus produced the remarkable volatility. This uncertainty was not confined to the immediate future but involved perceptions over an extended horizon. The position papers for the meetings of September 1981 and March 1982 explained in greater detail the effect of a pervasive uncertainty fostered by our policymaking on the behavior of financial markets. The argument shows in particular how such policymaking should be expected to produce the patterns summarized by the three major facts.

The analysis presented in previous position papers implies a persistent anti-inflationary policy (in the average) gradually lowers the markets uncertainty. As time passes and the markets learn about such persistence throughout the noise of misinterpreted verbal and statistical events both the level and variance of interest rates decline. This actually happened over the past two years. The level moved along a declining trade for more than one year and the variance (on all maturities) declined by a large margin since 1980.

The "failure" expressed by the high level and variance of interest rates was thus not produced by the shift to a strategy of monetary control. It was conditioned by the basically uncertain commitment and the inadequate tactical delivery. The behavior of interest rates offered us consequently an index of the Fed's credibility level determined by the market. There was thus indeed a failure revealed by the observations noted above. We suffered the consequences of a fundamental failure in our policymaking institutions.

2. An "Unforeseen" and "Avoidable" Recession

The second dimension of the alleged failure involves the recession emerging in late summer or fall of 1981. Two strands need be distinguished in this context. One strand of arguments confronts the Administration with the surprising appearance of the recession unforeseen by the policymakers. The second strand accuses the policymakers of generating a recession in order to curb inflation.

The first strand does indeed reveal a specific failure of the Administration. The official forecasts published in the early months of the new Administration could hardly be substantiated in terms of available analysis and evidence. The forecast of output and inflation was difficult to reconcile with the Administration's proposed course of financial policies. The "Shadow" noted in March 1981 that the execution of an anti-inflationary monetary policy would induce a recession under the conditions inherited at the time. The Administration's forecast emerged as a compromise of conflicting assessments advanced by various branches of the government. The preparations were probably also influenced to some extent by the daydreams of "supply siders". The simple political motivation to produce "numbers which look good" contributed to the outcome. This process could hardly produce any forecast relevantly addressed to economic reality. An essentially political procedure yielded a forecast, representing the Administration's official position, thoroughly disqualified within less than three quarters. The consequences of this numerological exercise lowered the credibility of the Administration's whole program. We observe unfortunately that the Administration proceeded for its most recent forecasting exercises in the same manner. We should recognize at this stage a failure in policy-making, a failure fostering subsequent repercussions on the political market which tend to obstruct the Administration's basic goals supported by the "Shadow" in its statement of March 1981.

The first component of the "recession failure" does not concern the fact of a recession but the failure to acknowledge publicly the probable consequences of an anti-inflationary policy. The second component addresses the fact of the recession. The ideas advanced in this context do not constitute a single coherent block. Some "supply siders" argued that inflation could be curbed by inducing an explosive and sustained growth due to reductions in tax rates. Others objected that an anti-inflationary monetary policy only achieves its purpose by producing a recession. A recession of sufficient length and depth forms thus, so we hear, the deliberate target of an anti-inflationary policy of monetary control.

The "supply siders" objection is easily shown to be unfounded. Important supply side effects due to existing expenditure programs and regulatory programs are neglected. There is no analytic or empirical basis to expect sustained rates of real growth of up to 8 percent p.a. necessary to remove inflation without lowering monetary growth below levels experienced in 1979/80.

The argument emphasizing the use of recessions as a means to curb inflation appears more frequently and dominates the media. It requires thus more serious attention. The issue has been discussed on several occasions at the meetings of the "Shadow" and was considered in previous position papers prepared over the past eight years. First and foremost, we need to emphasize that a necessary and sufficient condition for lower inflation is a correspondingly lower rate of monetary growth. We deny on the other hand that a recession with sufficient length and depth is a necessary condition of an anti-inflationary program. Whether or not the monetary retardation required for our purposes translates into a recession depends crucially on the credibility of the policies pursued. A high credibility induces strong incentives to re-examine price-wage setting patterns established under the expectation of permanent inflation policies. A lower credibility obstructs such incentives. Monetary retardations produce consequently under the alternative states radically different output and price-level responses. The reader may find an excellent summary of the issue in an article by Marvin Goodfriend in the Economic Review, published by the Federal Reserve Bank of Richmond: "There is an important lesson in the successful restoration of price stability following the German hyperinflation which is relevant for our own time. A reduction in money growth can bring the inflation rate down significantly in a short period of time with relatively minor temporary reductions in real economic activity. But it must also be emphasized that for such a policy to work well, i.e. to affect inflation and not real economic activity, it is essential that the monetary authority announce and carry out real meaningful reform of its money growth policy. Suppose the monetary authority is truly committed to eventually bringing down money growth, but it moves in fits and starts or disguises its intentions, for example, to forestall criticism from groups hostile to its policies. Reductions in money growth, when they do come, will impact less on prices and more on real economic activity because there may be some doubt as to whether the money growth reductions will be sustained. The policy will work well only if the monetary authority establishes a commitment to bring money growth down that is credible to the financial markets and the public in general".

The emergence of a substantial recession in the course of an anti-inflationary policy reveals indeed a "failure in policy-making". The length and depth of the recession reflects the low credibility of current policies as a result of the past experiences. The same observations which conditioned the diffuse uncertainty expressed by financial markets also shape the magnitude and length of the recession. The failure attaches thus not to the decision (or fact) of a monetary retardation necessary to lower inflation. It attaches to our past record of policy-making and the strategic conception and tactical aspects still dominating our monetary policymaking.

III. THE "FAILURE" OF MONETARY CONTROL

The actual failures in policymaking described in the previous paragraphs should not obscure an important accomplishment. Monetary growth has been lowered in the average over the past years. The course was moreover maintained during the recession. The rate of inflation substantially declined beyond the expectations expressed by last year's consensus forecast. Some progress appeared thus throughout diffuse uncertainty suffered by the financial markets. But the "voices of failure" still question this accomplishment. Their doubts are essentially concentrated on the technical feasibility (or desirability) of monetary control. Financial innovations create allegedly new and unpredictable patterns destroying the basis of monetary control. Measurement problems are so severe "that nobody knows what the money stock is". Nobody seems to know which of the various monetary aggregates to control. Lastly, it would appear more sensible to control directly the growth rate of nominal gross national product. The following sections examine these reservations addressed to a policy of monetary control.

1. Financial Innovations

The fact of financial innovation can hardly be contested. We observed a remarkable array of new developments in the financial industry. Innovations occurred however also during the 1950's with the explosion of the thrift institutions. We also heard voices at the time that this process undermines the effectiveness of monetary policy.

Almost all arguments linking financial innovations with an erosion of monetary policy are essentially speculative and impressionistically suggestive. The conclusions are "plausible" impressions not supported by analysis or evidence. This issue has been addressed in previous position papers. The present section offers some important aspects of the problem.

The issues posed by financial innovation for our purposes can be usefully organized in terms of two relations: the relation between the money stock and nominal gross national product and the relation between the monetary base and the money stock. The first relation is expressed by monetary velocity and the second by the monetary multiplier. Changes in the economic structure induced by financial innovations will be revealed by the time series pattern governing monetary velocity and the multiplier. If the assertions about the consequences of financial innovations typically advanced are correct, then we should observe significant shifts in the patterns characterizing either multiplier or velocity. The patterns prevailing until a few years ago could not explain under the circumstances the multiplier's behavior over the past few years. Similarly, a larger trend element and a significantly larger variance of the stochastic innovation term would describe the more recent time series process of velocity. A statistical examination of the data yields no support for these implications of the thesis bearing on the consequences of financial innovations. The trend in M-1 velocity shows for the 1970's a somewhat larger estimate than for the 1950's. Their respective 95 percent confidence intervals overlap however to a large extent. The variance of the stochastic innovation is actually substantially smaller for the 1970's than for the 1950's. There is thus most definitely no evidence of a significant increase in the variance. The data do however yield evidence of a significant change in the form of the stochastic process. A first order moving average (for the first difference of log V_1) ruling during the 1950's was modified into a random walk for log V_1.

The position papers regularly prepared by Robert Rasche for the meetings of the "Shadow" provide the necessary information bearing on the multiplier. This work, amplified and buttressed by scholarly papers in professional journals, yields until the early months of 1982 (the last report made) no change in the structure of the process generating the movement of the multiplier.

The statistical evidence yields so far no case at all for the dramatic policy consequences attributed to financial innovations. The controllability of monetary growth has not been affected. The experience of the Swiss National Bank indicates moreover that even in the context of a substantially larger unpredictable short-run behavior of the multiplier the Central Bank can still execute an effective anti-inflationary policy. Secondly, there is no evidence that the link between money stock and gross national product has significantly worsened. But, lastly, there is evidence of more or less gradual shifts occurring over time in the form of the process governing velocity.

The last two points bear on a standard argument advanced by Fed officials in support of a "flexible approach" to policymaking. Flexibility seems to be particularly required whenever we experience changes or a lessened reliability in the link between money and gross national product. But either one of the two evolutions converts the claim for a "flexible policies" into an empty gesture. A lessened reliability offers no assurance that "flexible adjustments" improve the policy record. Systematic responses to larger noise levels in the data raise the likelihood of destabilizing actions. A meaningful flexibility requires more and not less reliable information.

One last issue need be briefly emphasized in this context. Federal Reserve officials typically interpret the stochastic properties of velocity as representations of the random shocks operating on money demand. This interpretation justifies their case for an accommodative stance expressed specifically by an interest targeting policy.

But the equivalence between velocity and money demand shocks does not hold. The stochastic properties of velocity reflect all the shock patterns operating on the economy including shocks in the financial sector beyond money demand and most particularly also all real shocks. A more or less significant increase in the variance of "velocity innovations" offers thus no basis for a policy assigning greater weight to interest control.

2. The Measurement Problem and the Choice Among Aggregates

The statistical results summarized above for our assessment of the role of financial innovations also offer information about the measurement problem. This problem was dramatically articulated by Frank Morris, President of the Federal Reserve Bank of Boston (Wall Street Journal, June 22, 1982). The previous section considered the possible effect of financial innovations, in the absence of any measurement problem, on the behavior of monetary aggregates. Morris emphasizes in addition that financial innovation creates essentially intractable measurement problems. The concept of a money stock would be meaningless and a monetary policy addressed to the control over monetary growth impossible to execute. Financial innovations blur apparently two distinctions: the differentiation between money and liquid assets and the differentiation between money and debt.

The innovative arrangements developed by the financial industry are indeed ingenious. But a description of these innovations and their immediate effect on portfolio managers offers little information beyond plausible speculation. We still understand the meaning of "money", i.e. any object generally (with high frequency and regularity) used as a means of payment. We observe a small group of assets held by participants in the social game which behave in this respect very differently than most other assets. The borderline between the two groups of assets and the specific forms of assets constituting money changes over time. The location of the borderline will hardly ever occur with any definite precision. We always need to cope with some measurement problem. The obligation of a Central Bank for an anti-inflationary monetary control necessarily includes a duty to maintain an adequate data base and reexamine with some regularity its measurement procedures. A Central Bank can always assure a persistent measurement problem by creating incentives for accelerated innovation (regulation and inflation) with a suitable inattention to the data requirement.

Little reason has been advanced thus far to convince us that the measurement problem is intractable and the error so large that any M- measure is "meaningless".

We note on the other hand an extensive use of many other important economic magnitudes, e.g. the inflation rate, the change in the gross national product and of its components, the real rate of interest, the unemployment rate, budget data etc. with little qualification about their respective measurement error. Most particularly, no evidence has ever been presented suggesting that the measurement error of the nation's money stock vastly exceeds the error of the CPI as a measure of inflation. I suggest that the opposite holds true with a wide margin.

The statistical examination of the patterns traced by velocity and multiplier explored in past position papers and partly surveyed above yields important information bearing on our subject. A substantial measurement error seems to have emerged by the end of the 1970's. The revision of the measurement procedures consistent with the definition of money lowered however the measurement error to an acceptable range. There is still room for improvement which the Fed should explore. An intractable measurement problem with increasing error would necessarily be reflected by significantly shifting patterns of both velocity and multiplier. The results reported above and summarized in more detail in the position paper prepared for March 1982 offer no support for the claim that our data are seriously affected by large and increasing measurement errors. One of the results obtained is especially informative in this context. The velocity of the monetary base, denoted with V_o, is the product of the multiplier (for M-1) and V_1, or in logarithmic expression

$$\log V_o = \log m_1 + \log V_1$$

Let m_1^* and V_1^* designate the true magnitudes and μ and ν the respective (multiplicative) measurement errors, so that

$$\log m_1 = \log m_1^* + \mu \qquad \text{and} \qquad \log V_1 = \log V_1^* + \nu$$

The effect of measurement errors involving M-1 (or similarly M-2) does not affect the base velocity. It follows in particular that $\mu = -\nu$, i.e. the two measurement errors necessarily offset each other in the definition of the base velocity. The base velocity remains thus unaffected by this specific measurement problem. It could still be affected however by shifting substitution relations induced by financial innovations occurring in the absence of any measurement problem. But the time series comparison of base velocity for the 1950's and 1970's offers little support for such contentions. The rational response to the emergence of a serious and persistent measurement problem is thus quite simple: monetary policy should replace the instrumental use of the base for purposes of monetary control with a base control approach.

The argument concerning the differentiation between money and debt advanced by Morris offers a good example for the irrelevant impressions surrounding the discussion. Some innovations are supposed to invert the timing relation between money and debt creation. Under "overdraft accounts credit card systems" payments are made before debt is created. This innovation hardly affects however the basic characteristics and determinants of the money supply process. Morris also asserts that "automatic credit programs" must raise velocity. The effect of such programs depends essentially on lower transaction costs. They contribute over a period to a modest extent, with other innovations, to produce a positive trend in V_1 with a lesser effect on V_0. But whatever the magnitude of this effect may be, it supports no case against a feasible execution of monetary control.

The questions considered in this section also apply to the choice among monetary aggregates. The multiplicity of aggregates seem to pose a serious obstacle for a monetary control policy. Multiple aggregates offer at least a convenient objection against a policy of monetary control. Their appearance may have actually been influenced by such considerations. But they involve no serious problem for an effective anti-inflationary policy executed over a longer-term horizon. We note first that no aggregate beyond M-1 or M-2 need be considered as a relevant magnitude of monetary control. In the absence of unresolved or differential measurement problems monetary control can always be formulated in either M-1 or M-2. The choice will determine the benchmark of non-inflationary monetary growth to be considered by the policy maker. In the context of unresolved or unattended measurement problems for both M-1 and M-2 (as in the United Kingdom) monetary policymakers should provisionally target directly the monetary base.

3. Controlling Nominal GNP Versus Controlling Monetary Growth

Monetary control is not exercised for its own sake. It is an instrument used to influence the behavior of the price level or of the nominal gross national product. A strategy of monetary control manipulates an intermediate magnitude as a means to influence the behavior of an ultimate target. It is claimed on occasion that this intermediate targeting is inefficient. A "final targeting" is offered as a more efficient strategy. Monetary policy should directly control the nominal gross national product. Analytic elaborations of this idea which postulate a direct control of nominal GNP by the authorities, in the sense of a specific action which can immediately fix this magnitude, are hardly worth any discussion. A more relevant approach argues that an economic structure, defined by a model, implies a unique relation between policy instruments and nominal GNP. No intermediate target is needed. On the contrary, it can be shown that, given the model, the use of intermediate targeting is in general an inferior procedure. This argument depends however crucially on the assumption of full and reliable information expressed by the model. This assumption still belongs at this stage to Never-Never Land. Controlling GNP on the basis of misconceived beliefs about the details of the economy's response structure involves substantial risks of a destabilizing activist policy pattern. The necessary and sufficient condition for "controlling nominal GNP' are simply not satisfied. There exists thus no relevant empirical basis for the claim that monetary control is an inferior procedure. This would be the case with ideal knowledge, but not in the reality of seriously incomplete information about the true structure governing economic processes.

A different interpretation of "GNP control" should be mentioned. It is not offered as an alternative to monetary control. It functions equivalently to the ultimate goal of a stable price-level as a long-term guide to the formulation of monetary control. This long-term guide sets the benchmark of average monetary growth. This benchmark depends on the trend in velocity and the economy's normal real growth. The same information (stable price-level and normal real growth) can be used to formulate the growth in nominal GNP as a guide for setting the benchmark of average monetary growth. This meaning of "GNP control" is thus quite consistent with a strategy of monetary control.

4. The Retreat to Permanent Inflation

Two aspects characterize the arguments opposing the use of monetary control policies. The previous sections discussed the first aspect represented by an array of plausible impressions with little basis in analysis or evidence. The remarkable disregard of relevant alternative policies forms the second aspect. The President of the Federal Reserve Bank of Boston, for instance, offers us no clues on what the alternative to an "impossible" policy of monetary control should be. The array of objections share however one central implication: they represent an implicit retreat to a policy of permanent inflation executed by one of several tactical procedures. Serious opposition to a policy of monetary control will not be reconciled, as a matter of fact, with a persistent and reliable anti-inflationary policy.

The proposal advanced this summer by 31 Democrat Senators specified an alternative beyond the usual objection to monetary control. The proposal specified an explicit return to a strategy of interest control. Some others argued that a change in the "policy mix" was required. The combination of a "loose" fiscal policy with low monetary growth should be replaced by a large monetary expansion offset with a "tight" fiscal policy (balanced budget through higher tax rates?). Both proposals involve a retreat from anti-inflationary policies. Acceptance of these proposals would signal a commitment to permanent inflation, high and volatile interest rates and disarray in international monetary affairs. These consequences produce over time price and credit controls in shifting forms. They are also likely to raise real tax rates and lower the (weak) political pressure to control the magnitude of the budget. The battle over monetary control involves thus issues substantially beyond some tactical technicalities. Its outcome will influence the socio-political reality of the final years of this century.

IV. THE "INSTITUTIONALIZATION" OF MONETARY POLICY

The "voices of failure" do address a serious problem. They misunderstood however the nature of the issue. Both components (interest rates and recession) of the relevant failure reflect a long history of strategic conception and tactical procedures. This history produced the deflation of the Great Depression and the permanent inflation of our age. The massive failure of monetary policymaking directs our attention to a basic question: how can we arrange our monetary affairs in a manner which avoids simultaneously the risk of large and persistent deflation or inflation?

The problem of an optimal monetary arrangement, expressed by the choice of a monetary standard, may be approached in a different but equivalent mode. Agents participating in the social co-ordination game are exposed to a wide diversity of risks. Many risks express the operation of shocks modifying natural conditions, changes in technology, organizational skills and information, tastes, demographic conditions etc. But this variety of "real shocks" does not exhaust the risks confronting agents. The behavior of monetary authorities extends the range of shocks affecting the economy and correspondingly shapes the total risks experienced by agents.

The traditional ideology of Central Banking fully recognizes the on-going operation of shocks and the associated risks experienced in market transactions. The occurrence of the real shocks justifies apparently an activist mode of a discretionary policy. The opportunity to create monetary shocks by suitable discretionary management can be effectively exploited. Such exploitation should adjust the monetary shocks in response to all other shocks in order to minimize the total risk encountered by agents. The reliable formulation of a risk-minimizing activist strategy requires however a full knowledge of the true stochastic processes of all on-going shocks with a corresponding information about the economy's interacting structure. This knowledge is a necessary and sufficient condition for reliable risk-minimization. This condition offers not even the roughest approximation to reality. Attempts at risk-minimizing strategies involve under the circumstances a substantial likelihood of raising the total risk of the social game. The Great Depression and the permanent inflation exemplify the point. The case for risk-minimizing activist strategies expresses thus a "cognitive conceit" beyond our relevant political concerns. The relevant political issue suggested by analysis and experience focusses our attention on a different question. What are the monetary arrangements which effectively prohibit an increase of the total risk produced by monetary shocks beyond the basic "natural risk?"

The relevant set of arrangements contains three major options: some form of a gold standard, a "free banking" system with private production of money, and a constant monetary growth standard. All three standards impose more or less stringent constraints on the government's power to manipulate monetary affairs. Each option requires ultimately an appropriate constitutional specification in order to anchor monetary arrangements beyond the incentives of a short-run political process. Even so, constitutional constraints are not beyond the longer-run operation of a political process. This long-term exposure of constitutional arrangements seems to affect all three options to a similar extent. It offers no rational basis for any preference among the major options. We are thus led to compare the total social risk produced under the alternative standards. This problem has not been sufficiently explored in the literature and was certainly never raised by policymaking staffs or officials. Some very preliminary examination suggest that a constant monetary growth standard credibly initiated by the US authorities would probably produce a lower total risk than either a gold standard or free banking. This issue remains somewhat open and some deeper exploration need be pursued. What is hardly open to serious dispute at this stage is the inferior performance, expressed by a correspondingly high risk, produced by a strategy of discretionary policy-making. A constant monetary growth standard would exclude the high risk potential associated with the Central Bank's preferred strategy.

TRANSITION TO A NEW REGIME

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I. THE LEGACY AND THE REAGAN PROGRAM

Erratic stagnation, inflation and volatile interest rates characterize the recent state of the US economy. This state is neither preordained nor the random product of a mysterious stochastic process unfolding over history. It was conditioned to a major extent by the pattern of policies, and administrative and court decisions evolving over the past twenty years. A reversal of the trend experienced during the last decade requires under the circumstances a radical change in basic policy conceptions and the nature of policymaking.

The Reagan Administration's program offers a new direction with a different thrust. Its objectives are clear enough and well known. Inflation should be lowered with the expectation of eventually achieving a stable price level. Normal output and the rate of growth need both be raised. The strategy addressed to the pursuit of these objectives has also been well presented to the public. Monetary policy need be adjusted to a systematic control over monetary growth. This control should moreover be used to produce a precommitted and publicly announced decline in monetary growth. The reliable and recognized performance of this new approach in monetary policy is also expected to lower the level and volatility of interest rates. Stimulation of output and growth is expected to result on the other hand from a "lower level of government". Lowering the level of government involves two dimensions: it bears on the execution of budget powers and the application of police powers. A reduction of marginal tax rates with a corresponding containment and restructuring of expenditure programs raises the incentives to work, save and invest. The redirection in fiscal policy should also eliminate over four years the entrenched budget deficit. The stimulation of output and growth requires however more than a new approach to the use of budgetary powers. An overregulated economy impairs the efficient use of our resources and obstructs innovative developments of new resources. A new approach will also be required in our regulatory policies. This redirection ought to attend with greater care and explicit awareness to the social costs (i.e. the human values forfeited) by any kind of existing or intended regulatory activity.

II. SOUND AND CONFUSION OF A TRANSITION PERIOD: MONETARY POLICY

A familiarity with objectives and general strategy seems hardly sufficient to assure a smooth transition to a new regime characterized by a new policy conception and a different pattern of policymaking. The erratic behavior of our financial markets, so generally commented upon, dramatically reveals the difficult problems encountered over the transition period produced by a radical change in policy conceptions. The tactical execution of the general strategy unavoidably produces in the context of the inherited problems diffuse uncertainties and shifting apprehensions. The "sound and confusion" produced by the markets' efforts to absorb the new information becomes amplified by the media process. Changing uncertainties about the detail of the tactical course or about its path over time, anxieties about the reliability and commitment to the strategy, or an unstable spectrum of apprehensive and confused interpretations of current events and conditions affect all markets, but most visibly the financial markets.

Much of the "sound and confusion" reflects a sense of disorientation and doubtful reservations. Some of this disorientation expresses persistent ignorance, confusion or uncertainty bearing on monetary matters. The market for words and interpretations abounds with assertions that we hardly know what money is, or that for one or the other reason it is really impossible to control its magnitude or rate of growth within any useful tolerance band. Both groups of claims possess however no relevant foundation or justification. The first group frequently confuses the definition of money in terms of its crucial behavior characteristics (generally used means of making payment, i.e. comprising any object used with dominant frequency as a means of settling transactions) with the specification and procedures required for its adequate measurement. The behavior of peasants, retailers, workers and of most any other agents unmistakeably reveals that they do systematically distinguish between "money" and "non-money credit", or between money and bonds or many other assets. The agents' skill at differentiation between market objects with distinctive characteristics does not resolve however the measurement problem. Attention to this problem forms an essential strand of the responsibility assigned to monetary authorities. The Federal Reserve Authorities increasingly recognized this obligation in recent years. The specification and procedures have been repeatedly adjusted to represent the innovations produced by the financial markets. There still remain some problems requiring future attention. But the emergence of major problems would be signalled by significant breaks in the behavior pattern of the respective monetary velocity as expressed by trend and variance around trend (or more generally by the nature of its time series structure). We may note that no significant breaks in the patterns have been observed so far. The controllability of monetary growth seems sufficiently assured in this context relative to the magnitude of the problem to be addressed.

The other denials of effective monetary control made in the public arena fare no better. Their suppliers hardly ever appear to know the accumulated scholarly work analyzing the structure of the money supply process and the major determinants of observed money stock behavior. The denials involve usually no more than sweeping impressions unsupported by any analysis or evidence. The reader may examine in contrast the empirical investigations prepared over the past three years on behalf of the SOMC by James Johannes and Robert Rasche. We also note that the examination of the control problem prepared by the staff of the Board of Governors essentially confirms the contention advanced over many years by the SOMC in this matter.

Controllability does not assure its exercise by the authorities. Some Central Banks fully recognize the technical feasibility of monetary control but find it politically difficult, for some reason, to pursue such control. The behavior of financial markets suggests that this political question probably governs the erratic skepticism expressed by agents on the market place. The behavior of the Fed still encourages doubts about its commitment to a longer-run anti-inflationary monetary policy. This doubt is nurtured by a tactical procedure and by arrangements under the control of the Fed lowering the reliable delivery of an effective monetary control strategy. These reservations are reenforced by apparently conflicting statements made by various officials over the past two years. Ultimately, there is only one solution to this problem: the Fed needs to institutionalize more definitely its acknowledged strategy of monetary control. In particular, the doubts and reservations addressed to the Fed will vanish with the increasing length of time that the Fed adheres to an effective anti-inflationary commitment of monetary control.

III. SOUND AND CONFUSION OF A TRANSITION PERIOD: FISCAL POLICY

The behavior of the financial markets and the related discussions in the public arena directs our attention however beyond the Fed and the immediate prospects of monetary policy. Doubts and apprehension about the course of the Federal budget and budgetary policies appear to dominate the market's erratic drift at the high level of interest rates. The current phase emerged in a difficult transition to a state with a lower real magnitude of a balanced budget (relative to national income). These objectives of the Reagan

Administration are not ends in themselves. They are designed to shift resources from the public to the private sector and encourage a more efficient use. They will also lowe consumption and encourage private investment in productive capital. This change in the use of our resources with the resulting effects on normal output and normal rate of growth essentially determines the Reagan Administration's fiscal strategy. But the strateg requires some tactical procedures and the tactical aspects with their public discussion seem to have obscured the ultimate strategy and its purpose in the public arena. The "supply side story" dramatized by the media market contributed most particularly to general confusions and irrelevant expectations. It concentrated public attention on tax policies and neglected expenditure policies. It conveyed thus a false sense about the real tax burden imposed by government. It also neglected the consequences of a persistent large deficit, or promised miraculous effects on output growth to be expected just only from lowered marginal income tax rates.

IV. ALTERNATIVE TACTICAL PROCEDURES OF FISCAL ADJUSTMENTS

The hesitations and reservations were reenforced by the disjointed set of forecasts published by the Reagan Administration earlier this year. This incoherence between the forecasts for output, price-level and the monetary evolution was explicitly noted at the occasion of the meeting held by the SOMC last March. The Shadow decided at the time to disregard this set of essentially irrelevant data and invited all interested parties to direct their attention to the program itself and its consequences. The irreconcilable forecast patterns supplied by the Administration appeared to emerge from a compromise between two alternative tactical conceptions submitted to the Reagan Administration's attention.

One conception argued that nominal gross national pruduct should continue to grow for this and (at least?) the next year at a rate well beyond 10 percent p.a. The rate should be sufficiently high in order to prevent recessionary effects imposed by a restrictive monetary policy. A figure of 13 percent p.a. was mentioned in this context. Monetary policy need be geared to accommodate this target. Substantial tax reductions would stimulate a large increase in real growth according to the supply side story. Output experiences under the circumstances an unobstructed opportunity to grow into the range provided by the nominal expansion assured by an accommodating monetary policy. The accelerated rise in output is expected moreover to depress the inflation rate point for point. This strategy would also assure that the "supply side policies" can be executed without endangering the goal of a balanced budget.

The alternative conception emphasizes a simultaneous attack on tax rates and expenditure programs combined with an anti-inflationary monetary policy systematically lowering monetary growth over four years. This proposal recognizes that it probably involves a recession. The magnitude and duration of this recession is essentially determined by the degree of credibility attributed by the market at this stage to the policymakers. A larger degree of credibility induces more rapid revisions of price-wage setting in response to the announced anti-inflationary policy. And a more rapid revision lowers both the magnitude and duration of the temporary retardation of output and employment. Whatever the retardation may be, it does not obstruct the gradual emergence of the longer-term supply side responses induced by the reversal in fiscal and regulatory policies. An imbalance of the budget could persist however for some time under the second approach. Its magnitude and duration depends on the recession and the nature of the revision procedure in fiscal policy. A larger recession combined with a concentration of political effort on tax reductions could create for some time a substantial deficit. This result does not endanger the eventually dominating effect of a maintained anti-inflationary monetary policy.

The first procedure essentially assures approximate balance in the budget by suspending or postponing for years any serious anti-inflationary policy. Budget balance is achieved by offsetting the nominal reduction in tax rates with the inflation induced "bracket creep". But this implies that the reduction in nominal tax rates would not produce a corresponding real rate reduction. The intended incentives and the corresponding stimulus would hardly materialize under the circumstances. The prevalent skepticism expressed by the behavior of credit markets with respect to the future course of monetary policy would moreover be substantially confirmed by this approach. Interest rates would continue in this case to move erratically for a long time along a high level.

The Administration may have settled for some compromise of the alternative proposals. It certainly determined quite early in its operation to work with the Federal Reserve Authorities in order to develop an anti-inflationary course of monetary policy. The required retardation of monetary growth is well under way at this stage. It has also managed successfully the major tax reductions bearing on personal income and business investments of various kinds. The approach to the expenditure side has been substantially less sweeping though certainly commendable. This compromise may well have been unavoidable under the circumstances. It would appear very difficult, if not politically impossible, to launch a total revision of the budget all at once in one single package. But the compromise produces its own problems which the Administration needs to consider. I yields in particular a large deficit encouraging a variety of fears about the future course o our financial policies. Some of these fears are poorly founded and somewhat exaggerated But the fears do include a relevant core. Without a determined effort to contain th expenditure programs we will experience either a reversal of monetary policy or "crowding-out" of the private sector from the capital market of major magnitude. Th objectives of the Reagan Administration are best served under the circumstances by maintaining the anti-inflationary stance in monetary policy and forcefully addressing the expenditure side of the budget. This need not involve a "social dismantling", but does require a resourceful reexamination of the social programs and eventually a substantial restructuring of their operation.

V. THE CHOICE OF A MONETARY STANDARD

A Presidential Commission was appointed earlier this year in order to appraise the merits of a gold standard. The advocates of a gold standard argued their case over recent years with an increasing intensity. Their program frequently combined the Kemp-Roth fiscal strategy with a return to the gold standard. This program was motivated by the erratic social cost increasingly imposed by the government's fiscal and monetary policy. The Great Depression of the 1930's and the permanent inflation generated over the past 16 years by our monetary authorities reveal a fundamental flaw in our monetary arrangements. These major social failures of our policy agency were not prevented under the existing institution of an "independent Central Bank". This institution emerged in response to pervasive experiences with the political misuse of the Central Banks' money creating potential. Central Banks offer opportunities to finance expenditures in circumvention of parliamentary revenue approvals. An independent monetary authority separated from the government's fiscal operation was supposed to pursue policies in the best long-run interest of the nation. This independence provided however little guidance to the Central Bank. It failed moreover to constrain an extended political interaction between an "independent monetary agency" and a broader political market place. "Independence" could ultimately not separate a Central Bank from some political interaction so long as the policy agency was assured any range of discretionary action. It only modified the nature of the political interaction.

The lessons from past centuries combined with the social failures in our monetary policymaking in this century direct our attention once again to the social role of a monetary standard. The Shadow Open Market Committee should thus acknowledge the importance of such reexamination. It would seem useful at this stage to clarify first the social role of a monetary standard and secondly to evaluate the performance of alternative standards in the contexts of the pattern of underlying shocks typically affecting our economic life.

A standard constrains the "double temptation" encountered by a monetary agency in the political process. It obstructs the exploitation of money creating potential by the government for convenient financing of its expenditures. It also constrains on the other side the "discretionary exploitation" of its powers by the monetary agency. This second constraint appears at this stage at least as important as the first bearing on the fiscal temptation of government. The social failures of our century remind us that we can hardly expect a policy institution to behave in accordance with our favored social welfare function.

The choice between alternative standards should of course rely on a systematic assessment of their respective performance characteristics. Such assessment may increasingly attract the profession's interest in the near future. This interest would certainly be welcomed by the Shadow Open Market Committee. A rough comparision between three standards is outlined for our purposes at this stage. This sketch should really be understood in the nature of a research program. A fixed exchange rate standard (CEX) is juxtaposed to a constant monetary growth standard (CMG) and a domestic commodity reserve standard. The gold standard may appear in this context as a particularly important form of the first and the third standard, depending on whether the gold standard is an international or an isolated national arrangement.

The various standards differ most particularly in terms of their respective risk combinations and the determinacy of the long-run price-level. Under a CMG standard the generally perceived strategy prevents the emergence of fluctuations in real variables due to misperceived monetary shocks. This statement holds irrespective of short run deviations of monetary growth from target path, provided the general public firmly expects the long-run maintenance of the CMG standard. This standard involves on the other side the risk of fluctuations in real exchange rates with corresponding effects on domestic economic conditions. The CEX standard lowers the risk of real exchange rate movements with their specific real consequences. It accepts in contrast a large risk of substantial variations in misperceived or unanticipated short-run monetary growth inducing fluctuations in output, employment and the price-level. Under a CMG standard foreign real shocks will be absorbed by the exchange rate. The same real (and nominal) foreign shocks will be converted under a CEX standard into accelerations (and decelerations) of the domestic money stock. It follows under the circumstances that fluctuations in output and employment proceeding in the context of the CMG standard essentially result from domestic real shocks, not amplified by monetary responses, and adjustments in the allocation of resources imposed by variations in the real exchange rates induced by foreign shocks. Under the CEX standard, variations in output and employment are produced by domestic real shocks and the accelerations of monetary growth, yielding misperceived or unanticipated components of the monetary evolution, attributable to foreign nominal and real shocks.

Another major difference between the two standards should be noted. The CEX standard provides no anchor for the price level. Its rules impose a constraint on the inflation rates within the system but not on the system's price level. The inflation rates may deviate over time only in response to the operation of real shocks modifying the real rates of exchange within the CEX system. The CMG standard on the other hand can be explicitly designed to stabilize the price-level. This opportunity to anchor the price-level, built into the CMG standard, can be used to determine the benchmark level of monetary growth characterizing the standard. We note lastly that the CMG standard is not incompatible with the persistence of pegged exchange rates over wider areas. The reliable adherence to a CMG standard by a "Central economy", e.g. the USA, offers strong inducements to other countries to peg their currencies to the US dollar. An implicit division of responsibilities will spontaneously emerge under the circumstances. The "central economy" assumes responsibility for a non-inflationary monetary growth and the "participating nations" accept responsibility for their respective exchange rates. The formation of such a cluster will hardly encompass all nations. There may also emerge various regional currency areas committed to different levels of inflation policies. The important aspect to be emphasized in this context however is the compatibility of a CMG standard with a system of pegged, or intermittently fixed exchange rates.

Our attention turns lastly to a purely domestic gold (or commodity reserve) standard supplemented with a floating exchange rate. Whatever the specific form of the arrangement consistent with the general idea it would involve a relation between the value of the gold stock and the monetary base. This relation will control money stock and monetary growth in terms of the evolving behavior of the gold stock and its valuation. This valuation and the reserve ratio against base money can be used as a policy variable. The base moves under the circumstances in response to these policy variables and the underlying shocks modifying the real cost of producing (or acquiring) gold. In order to ensure longer-range stability in the price-level and minimize unanticipated or misperceived monetary movements affecting output and employment this domestic version of the gold standard would appear as a clumsy and expensive version of the CMG standard.

THE POLITICS OF UNCERTAINTY

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I. STRATEGY AND TACTICS DURING THE 1970'S AND THE RECORD OF PERFORMANCE

On October 6, 1979 the Chairman of the Board of Governors of the Federal Reserve System announced a change in tactical procedures. Monetary policy was formulated since the later years of the 1960's in terms of a money demand equation linking money stock (or monetary growth) with the federal funds rate and the projected value of gross national product. This formulation served the Fed for two alternative monetary strategies. It could guide a strategy of interest control but also be exploited, as the Fed maintained, for the purpose of a monetary control strategy. The tactical operations centered in either case on the federal funds rate. The two strategies differed essentially in terms of the role assigned to the federal funds rate. This rate and its expected relation to other interest rates formed the immediate centerpiece of an interest control strategy. A monetary control strategy, in contrast, used the federal funds rate as an instrument producing the desired path of monetary growth.

The formulation organizing the Fed's policy process was thus consistent with either strategy. It allowed subtle and rapid shifts in strategic emphasis difficult to recognize by outside observers. The conception was moreover well designed to protect the heritage of "discretionary policymaking". It offered an effective defense against increasing pressures for a commitment to a predictable policy of systematic monetary control. The analytic framework provided the appearance of monetary targeting, whenever desired, and still offered an opportunity to pursue the old conceptions and adhere to the accustomed pattern of a "discretionary policy". Lastly, it yielded an important and useful source for the supply of excuses on the political market. The consequences of neglecting a monetary control strategy, or of failures in the actual execution of such a strategy, could always, and usually were, attributed to unexpected shifts of an essentially unstable money demand. A poorly informed Congress and ignorant media could hardly be expected to cope effectively with such "explanations" advanced by "authority". This policy conception increasingly operated with an inflationary bias in response to the political realities emerging over the postwar period. It produced the record of a rising and erratic inflation accompanied by rising interest rates. This dismal record was "enriched" by repeated declines of the dollar on the foreign exchange markets.

II. THE APPEARANCE OF A CHANGE IN POLICYMAKING

The international response to the failure of the dollar ultimately forced the Federal Reserve Authorities to reexamine its policy in the fall of 1979. The Chairman's statement acknowledged the Federal Reserve's ambivalent strategy over the past decade. It also acknowledged that tactical procedures need be modified in order to assure a more reliable monetary control yielding more success in the battle against inflation. The new procedure claims to use non-borrowed reserves as an instrument directed to the control of monetary growth.

The policy conception corresponding to the new procedure can be described by an analytic framework consisting of two relations. The first is the money demand equation which expressed for years the previous strategic and tactical situation. But this money demand equation was supplemented with a reserve equation, relating the sum of non-borrowed and free reserves with required reserves. The volume of required reserves in any week are predetermined under current arrangements by the money stock prevailing two weeks earlier. The volume of free reserves depends on the other hand on the current federal funds rate, the Fed's discount rate and the institutions governing the "discount window". This dependence of free reserves (or essentially borrowed reserves) coupled with the predetermination of required reserves by the past characterize the crucial features of the Fed's "new" policy conception. They involve a remarkable revival of free reserves in the Fed's thinking. These reserves form according to the new framework a centerpiece in the Fed's conception of the control process.

The steps required under the new operational procedures may be described as follows: First, a monetary target need be set. This in conjunction with the projected value for gross national product determines in the context of the money demand equation a federal funds rate consistent with the targeted monetary growth. This federal funds rate can be fed subsequently into the reserve relation in order to project the expected volume of free reserves. The Fed may frequently just extrapolate however the most recent value of free reserves for their tactical purposes. This expected value together with the predetermined volume of required reserves determines the required amount of non-borrowed reserves needed to produce in the average the planned monetary target.

The new framework and its associated procedures substantially strengthens the Fed's political defenses. It defines a control process involving, in contrast to the earlier tactical procedure, the possibility of using a reserve magnitude as an instrument for the execution of control. But this possibility need not be exploited. The modified framework still allows the Fed to slip into an interest control strategy or to fall back on the federal funds rate as the actual instrument of monetary control. These options are all subsumed under the new framework. It allows thus in particular shifting combinations of reserve and federal funds targeting. The amended framework introduced after October 1979 thus serves the political purpose of the Fed even better than the prior concentration on the money demand equation. It combines the opportunity to emphasize the possible use of a reserve instrument in the monetary control process with the actual pursuit of the traditional pattern of a "discretionary policy" expressed by ambivalent strategies and shifting tactical combinations. The new framework and the related operational procedure yield thus no clear promise bearing on the course and nature of monetary policy. It emerged as a natural evolution of the Federal Reserve's traditional strategic thinking and tactical executions in response to public critique and the votes of no confidence cast by exchange and financial markets. But the very fact that it appears to offer better and more subtle justifications for the Fed's traditional commitment to undefined "discretionary policies, flexibility and judgment" should warn us that the basic problem posed by our policymakers in the Fed persists to this day.

III. THE FED'S TRADE-OFF THESIS

The framework used by the Fed supplemented by a standard Keynesian analysis implies that a closer control of monetary growth would have "to be purchased" by greater variability of interest rates. The Fed traditionally maintained that there occurs a trade-off between the variability of monetary growth and the variability of interest rates. Two major flaws in the Fed's traditional analysis condition this view. The response structure of the system is assumed to be invariant under changes of the policy regime or changes in the behavior patterns characterizing a Central Bank. Moreover, the shocks operating on the economic or financial system are usually treated as transitory events. The implications bearing on a possible trade-off are crucially affected by these assumptions. A different pattern emerges once we recognize the sensitivity of behavior patterns governing financial markets to variations in the policy regime and the operation of shifting mixtures of permanent and transitory shocks. A credible policy of monetary control, effectively executed and thus lowering substantially the variability of monetary growth, will not raise under these circumstances the variability of new interest rates over the maturity spectrum. The remaining variability will be understood to occur as a transitory event and thus hardly affect interest rates beyond the short end of the yield curve. The adjustment of financial behavior to this regime can be expected furthermore to moderate also movements of short rates over periods beyond one or a few days. Lastly, even a larger variability of daily short rates poses no serious economic problem when agents fully understood their transitory character. Recent developments in monetary analysis thus deny the relevance of the Fed's trade-off thesis.

IV. THE RECORD UNDER THE NEW REGIME AND THE POLITICS OF UNCERTAINTY

The experience made under the Fed's new operational procedure offers remarkable clues about the fundamental problem afflicting our policymaking. Two crucial patterns emerged over the past two years contrasting sharply with the trade-off thesis. We note first that both monetary growth and interest rates exhibit a substantially larger variability than in previous periods. Secondly, the correlation between interest rates over the maturity spectrum was significantly higher than in earlier times. The Federal Reserve authorities explained this variability in market rates of interest with the change in tactical procedures. They add that this variability was the cause of the prevailing uncertainty and confusion exhibited by the financial markets. The causation asserted by the Federal Reserve's view thus runs from the shift in operational procedure over an increased variability of interest rates to more pervasive and larger uncertainty.

V. AN ASSESSMENT OF THE RECORD OF UNCERTAINTY

The explanation offered by the Fed naturally corresponds to its basic positions. It also fits well with the usual political defense of "discretionary, flexible and judgmental policy". It fails however to account for the joint increase in the variability of both monetary growth and interest rates. The line of causation argued is moreover difficult to reconcile with the remarkable correlations between interest rates observed over the whole range of maturities.

The explanation of recent patterns observed on financial markets does indeed involve the element of a pervasive and diffuse uncertainty. This uncertainty is however of a very different nature than suggested by the Federal Reserve Authorities. Our financial markets suffered over the past two years under an increasing uncertainty about the future course of our financial policies. The announcement of October 1979 was difficult to interpret unambiguously. Its meaning remained vague, most particularly when it was considered in the context of supplementary interpretations offered by various Federal Reserve officials. By this time agents on financial markets had also learned since 1965 that all promises of an anti-inflationary policy were usually broken within a short time. Such promises were usually followed over the subsequent one or two years by even more prounced inflationary policies. By late 1979 the credibility of the Fed had already sunk to low levels and the October announcement deepened the confusion on the markets. The response of the bond market to the announcement at the time revealed this state quite clearly.

Subsequent events enlarged the uncertainty and made the markets' expectation even more diffuse. The increased variability of monetary growth raised more questions about the Fed's longer-run policy. We frequently hear that larger accelerations (or decelerations) of the money stock lasting at most six months can be disregarded and impose no problem on the economy. In the absence of credible policymaking larger variability of monetary growth entrenches however the prevalent uncertainty even further. It is this uncertainty which fosters the overheated attention to weekly data. Under a diffuse uncertainty agents grope for every possible clue and sign yielding some information about the future course of policy. The observed variability in monetary growth contributed thus to sudden and irregular shifts in the distribution of expectations among market agents.

One last element contributed to broaden the prevalent uncertainty. Speeches by Federal Reserve officials made over the past two years on various occasions reflected the persistent commitment to a traditional policy conception attuned to the Fed's political interests. These speeches, most significantly exemplified by President Solomon's speech delivered in early January 1982, signal a strong opposition to an effective strategy of monetary control. The general uncertainty produced by our monetary policymaking as a result of the history of broken promises, larger variability of monetary growth and the often revealed preference for the traditional "discretionary flexibility" dominated the behavior of interest rates over the past two years. The observed levels and variability cannot be explained in terms of the basic real rate on default-risk free securities or the inflation premium. The large real rates emerging in the recent past contain a substantial risk premium which hardly ever entered in the past history of our financial markets. This risk premium reflects the prevailing uncertainty imposed by our policymakers on the U.S. economy. This uncertainty explains both the level and the recent variability of nominal interest rates. Rapidly moving signals and clues watched by market agents induce shifts in expectational patterns expressed by sudden changes in interest rates. An array of signals suggesting adherence to an anti-inflationary policy induces a fall of interest rates over the whole spectrum. A wave of opposite clues produces rising interest rates. This pattern explains the positive association observed between monetary growth and interest rates. The market's behavior essentially denies the assertion that monetary expansions will produce lower interest rates.

VI. THE ROLE OF THE BUDGET DEFICIT

Our explanation of observed market behavior disregarded thus far the European's and "Wall Street" favorite villain. It is frequently argued that the behavior of interest rates is dominated by the budget deficit. The prevalent argument asserts such a connection irrespective and independent of monetary policy. But the argument is fundamentally flawed. The budget deficit, per se, cannot explain the observed behavior of interest rates. One strand of the argument derives the behavior of interest rates directly from an interaction between savings and the government sector's deficit. This view is however inconsistent with the core of economic analysis. Interest rates (or prices) on the bond and money markets emerge minute to minute from the interaction between the existing stock of securities and the private sector's stock demand (i.e. willingness to hold in portfolios). The latter is conditioned by the public's wealth and current or expected market conditions. The assessment of future market conditions substantially influences and frequently controls the shifts in the public's stock demand dominating the rapid changes of interest rates. These expectations are moreover crucially influenced by the public's evaluation of the future course of financial policies.

Budgetary deficits operate on interest rates under the circumstances not via any direct mechanism linking savings, investment and deficits, but via the public's assessment of future market conditions. This means in particular that sustained deficits are expected to raise over time the stock of securities to be absorbed in portfolios. This expectation tends to lower the current price of bonds and consequently raises the current interest rates. Savings on the other side raise wealth and expand over time the stock demand for securities. This tends to raise their expected price and will be discounted partly in the current price of bonds.

The correction of the prevalent argument bearing on the mechanism determining interest rates also affects the relevant order of magnitudes. We need to recognize first that savings and deficits modify the nominal rate of interest along the lines traced above by changing the real rate of interest. This elementary fact should warn us about the fallacy involved in the standard argument. The latter essentially discounts the inflation premium which dominated over the past years the average level of interest rates.

We also note that neither the magnitude of last year's deficit nor the existing real volume of Federal (marketed) debt can explain the observed nominal rates of interest. The deficit is comparatively smaller (relative to gross national product) than in 1975 and the real debt outstanding absorbed in private portfolios is still smaller than in the 1950's. These facts cannot be reconciled with the contention of a dominant deficit effect expressed by interest rates over the past two years. There is however still the potentially large deficit of an intractable budget accumulating over the next four to six years. Suppose that the real Federal debt in the context of a really bad scenario increases by 70 percent per unit of output over the next three years. How much would the basic real rate on default-risk free securities be raised as a result? Such estimates must be advanced with great caution and reservation. The empirical examinations accumulated over the past decades yield however no support for assertions claiming increases of the basic real rate by more than three percentage points. This figure seems already an improbably large upper bound on the relevant responses. An increasing volume of research suggests that the response to the government's financial decisions, given the magnitude of the budget and the expenditure programs, is substantially smaller. It follows that the removal of the inflation premium, achieved by a credible and sustained anti-inflationary policy, would dominate the increase in real rates due to budget deficits persisting over the next five years. The decisive strand in the future movements of interest rates is thus the monetary policy pursued by the Fed.

This does not quite exhaust our story bearing on budget deficits. The increasing uncertainty about the budget contributed and reenforced the uncertainty produced by monetary policy. The financial markets became increasingly apprehensive over the past two years about the future course of our budgetary policies. We do not know at the moment how much expenditures will be curtailed or what taxes will be raised. We do not know to which extent "the inflation tax" will be reinstated as large budget deficits persist. Neither do we know what combination of other taxes will be favored by Congress. But different combinations of taxes affect asset prices on capital markets very differently. The inflation tax raises the inflation premium and a variety of other taxes affect the gross real rate of interest. A diffuse and shifting uncertainty about the budget thus contributes directly to the uncertainty about monetary policy and reenforces the effect of this uncertainty on interest rates.

VII. THE CRUCIAL POLICY ISSUE: THE INSTITUTIONALIZATION OF UNCERTAINTY

The assessment of the problems confronting us in the recent past and at the moment directs our attention to the crucial policy issue. We know at this stage that the Federal Reserve actually has, in the average over the past two years, pursued an anti-inflationary course. We never knew it during these past months, neither did most of the agents operating on financial markets. Nor do we know at this point in time with any sense of certainty that the Fed will effectively deliver an anti-inflationary policy. If a large segment knew this with any sense of conviction interest rates would behave very differently indeed. Their behavior is after all the best indicator of the prevalent uncertainty. So far, the Federal Reserve Authorities made no clear and unambiguous commitment to a strategy of monetary control coupled with an effective tactical procedure. Our progress remains under the circumstances, at the very best, slow and erratic. The transition to a non-inflationary state of the economy will therefore be associated with comparatively high social costs. the most important contribution to be made by the Federal Reserve Authorities at this point in time is a convincing and generally understood commitment to an effective tactical procedure for the execution of a strategy of monetary control. This would be the most useful political measure to remove the burden of uncertainty on financial markets. It does not require any Congressional actions with the uncertainties facing the battle about the budget. The Federal Reserve Authorities can initiate an institutionalization of monetary control by their own initiative and political decision.

The Shadow has urged such a policy for almost nine years. If our monetary authorities had accepted our proposal in 1975/1976 or followed the recommendations repeatedly advanced by Congress or Congressional Committees, inflation in the past two years would have been low indeed with interest rates substantially below 10 percent. But the Federal Reserve disregarded all these urgent proposals and persisted with a policy producing both inflation and increasing uncertainty about its course. There is really no excuse for such a policy. We have formulated our tactical procedure on previous occasions and the Federal Reserve Authorities know our proposal. The proposal has moreover been tested over several years by James Johannes and Robert Rasche. The results of these tests have been published and were also included every six months in the minutes of the Shadow Open Market Committee. The record is very clear. It shows that monetary control over one year with a tolerance band not more than plus or minus one percentage point is technically quite feasible. This tolerance band is really quite small relative to the order of magnitude of the problem inherited from past years of monetary mismanagement. Even within the year an improvement over past performance seems feasible.

The tactics proposed would require that the Fed set a target path for M-1B (or M2) lowering monetary growth to a non-inflationary benchmark level (about 2 percent p.a.) over the next three years. This target path is maintained by suitable adjustments in the monetary base in the light of the expected profile for the monetary multiplier linking base and money stock. The studies prepared by the Federal Reserve Board's own staff establish that monetary control with an adequate tolerance level relative to the size of the problem is technically feasible. These studies thus confirmed the Shadow's argument and proposal. Axilrod, among others, recognizes moreover in the last issue of the Federal Reserve Bulletin that the monetary base is fully controllable by the monetary authorities. Any change in the base reflects dollar for dollar actions of the Fed changing its total assets or modifying its non-money liabilities. Its control over its balance sheet determines the Fed's potential control over the monetary base. the frequent allusion to the proportion of currency in base money outstanding is thus quite irrelevant in this context.

Beyond the record of the statistical tests presented by the Shadow lies a mass of evidence from "disinflationary policies" produced by various countries on different occasions. They all involved in one form or another a radical change in the regime governing the behavior of the monetary base. Such changes in regime are quite accessible to the policymakers, if they so desire. The central issue becomes thus the political will and the political interest of the Central Bank. But the political market offers unfortunately little appeal to reveal this interest so directly. The protection of inherited positions and interests (i.e. discretionary policies) is more effectively assured by a supply of judicious sounding reservations about monetary control and our proposal in particular. None of these reservations or objections survives any closer examination. My position paper cannot address however the whole array of imaginative objections advanced. A few major arguments need to suffice for our purposes.

Federal Reserve officials maintained on repeated occasions that our procedure anchored by the monetary base involves substantially more slippage than their tactical procedure developed since October 1979 and centered with non-borrowed reserves. This statement is particularly remarkable, as it is not supported by the Board's empirical examination of this issue. The empirical results produced by Johannes-Rasche established furthermore that the instrumental use of the monetary base for purposes of monetary control yields more reliable results and a smaller tolerance level than the instrumental use of non-borrowed reserves. We understand of course that our tactical proposal involves a radical break with the Fed's traditional strategic conception. We noted above that the tactical arrangements made in recent years should be understood as a political adaptation to existing pressures with corresponding adjustments in rhetoric without sacrificing an opportunity for the exercise of discretionary policies.

Financial innovations including claims about an increasingly unstable or unpredictable money demand are abundantly cited in arguments opposing monetary control. Financial innovations seem to make monetary control either impossible, irrelevant or both. My tentative survey of all these arguments found little, if any, analytic or empirical support for these contentions. Moreover, these contentions are usually advanced without any reference to the literature which has actually explored this issue, and apparently without any knowledge of these scholarly investigations. All the contentions in question can be expressed in one way or another as statements about the behavior of the monetary multiplier (i.e. link between monetary base and money stock) or velocity (i.e. link between money stock and gross national product). They assert in particular that financial innovations substantially modified the pattern exhibited by either multiplier, velocity or both. Such conjectures are fortunately assessable in terms of the observed data. The reports regularly prepared by Robert Rasche for the Shadow, included in all the minutes made publicly available, present evidence thoroughly disconfirming any assertions claiming changes in multiplier patterns. This result supports in particular our view that the Fed's emphasis on money demand shocks is misleading and false. Whatever money demand has done, there is no evidence in the multiplier patterns observed until this year that they eroded monetary control. There is also no evidence supporting President Solomon's (Federal Reserve Bank of New York) allegations that the relative movements of M-1B and M-2 observed in 1981 describe "actually a unique situation". Robert Rasche shows in his statement prepared for our current session that the new observations are quite consistent with the patterns observed over previous years. The last observations introduce no problem for monetary control. The same multiplier patterns also demonstrate that many other contentions invoking the Euro-dollar market or addressing other phenomena to claim erosion of monetary controllability are similarly unfounded.

Consider lastly the range of assertions claiming radical changes in velocity behavior. A preliminary investigation based on time series analysis offers so far no support for the contention of an increasing "looseness" of the link between money stock and national income. The stochastic term in the velocity process, i.e. the so-called innovation, exhibits for M-2 velocity an increase of 10 percent in its standard devision in the 1970's compared to the 1950's. The velocity associated with M-1B shows in contrast a decline of about 30 percent in the standard deviation of its innovation over this period. Lastly, the standard deviation of the innovation of base velocity declined over the same period by about 10 percent.

An investigation of the years 1979-1981 usefully supplements our evaluation. We can compute the probabilities associated with the most recent observations beyond the sample used to infer the properties of a velocity process. Very low probabilities under the maintained hypotheses would suggest that we accept the conjecture of a shift in velocity patterns. We find that the recent observations of base velocity should be expected one out of ten times under a maintained hypothesis. The corresponding results are slightly more than four out of ten times for M-1B velocity and also for M-2 velocity. These probabilities offer no support for the dramatic assertion about the changes in velocity behavior. These results do not deny the occurrence of financial innovations, but their effects on various aspects of the velocity process may hardly justify the reservations and objections voiced without much supportive evidence. The tentative and preliminary evidence suggests no problems for monetary control beyond the range of our experience. There is, once again, no substantive reason for the continued refusal of our monetary authorities to commit their policy to a predictable and effective strategy of monetary control. We have experienced the consequences of their game for the past decade and the most recent two years. The American public surely deserves better service.

MILTON FRIEDMAN

Defining 'Monetarism'

The Federal Reserve System is criticized by some for being slavishly monetarist; by others, myself included, for not following a monetarist policy. How come?

"Monetarism" has two very different aspects: as scientific analysis, and as a prescription for policy.

Scientific Analysis: Monetarism is a new term for an old empirical generalization known as the quantity theory of money.

The keystone of the quantity theory is the distinction between the *nominal* quantity of money (the number of dollars held as money) and the *real* quantity of money (the volume of goods and services that number of dollars will buy). Its central insight is that the nominal quantity of money is determined by the monetary institutions and authorities—currently the Federal Reserve System in the United States—but the real quantity of money is determined by the holders of money. Changes in the nominal quantity of money have important effects on output and employment in the short run; on prices in the long run.

Faster monetary growth tends to be followed after some three to nine months by economic expansion; slower monetary growth by economic contraction. For example, monetary growth speeded up after April 1980; an economic expansion started in July 1980. Monetary growth slowed after April 1981, and a recession started in July 1981. Monetary growth speeded up again after October 1981, the recession probably bottomed in April 1982 and we are now in the early stages of an expansion.

Because prices are sticky, faster or slower monetary growth initially affects output and employment. But these effects wear off. After about two years, the main effect is on inflation. For example, the quantity of money (as measured by M_1—currency plus checking deposits) grew at successive annual rates of 3.1, 5.0, 6.2 and 7.3 percent from 1960 to 1965, 1965 to 1970, 1970 to 1975, and 1975 to 1979. In corresponding periods (two years later) inflation, as measured by the consumer price index, was 2.0, 4.6, 7.7 and 10.7 percent. From 1979 to 1981, monetary growth slowed to 6.7 percent—and inflation fell from 1981 to 1982.

In a scientific sense Karl Marx was a monetarist, and so are Russia's central bankers today.

Faster monetary growth initially tends to reduce interest rates. However, after some months, the effect is reversed. As a result, continued high monetary growth means high interest rates; continued low monetary growth means low interest rates.

It is important to emphasize also what monetarism is not. It has little to say about fiscal policy, government policy toward industry or the long-term rate of growth of the economy. Bad monetary policy can destroy a healthy economy but good monetary policy cannot by itself cure a sick economy.

These statements about facts have no ideological content. In this scientific sense. Karl Marx was a monetarist and so are the bankers in Russia and China today.

Prescription for Policy: These findings mean that short-term changes in monetary growth, at the right time and of the right amount, could offset other forces making for expansion or contraction and so promote economic stability. In practice, that has not worked. Whether because we do not know enough or because political and administrative pressures have intervened, fluctuations in monetary growth have been wrongly timed and of the wrong magnitude—creating a major source of instability. In addition. monetary growth has been much too high. producing our serious inflation problem.

Like many other monetarists, I have concluded that the most important thing is to keep monetary policy from doing harm. We believe that a *steady* rate of monetary growth would promote economic stability and that a *moderate* rate of monetary growth would prevent inflation.

But these are precisely the respects in which Federal Reserve practice has departed from the monetarist prescription. Since the Fed adopted monetarist rhetoric on Oct. 6, 1979, monetary growth has been more volatile than in any comparable preceding period and has averaged 6.2 percent, not much less than the rates of growth that brought double-digit inflation.

Can the Fed produce steadier monetary growth? Can it gradually lower monetary growth to end inflation? The monetarist answer is clearly yes. By changing its operating procedures and the rules and regulations it enforces on banks, the Fed could match its actions to its rhetoric. It has just taken the first step in that direction by deciding to replace lagged with contemporaneous reserve requirements. That may be a hopeful augury for the future.

NEWSWEEK/JULY 12, 198

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HERSCHEL I. GROSSMAN
Merton P. Stoltz Professor in the Social Sciences
and Professor of Economics

August 16, 1982

Senator Roger W. Jepsen
Joint Economic Committee
Congress of the United States
Washington, DC 20510

Dear Senator Jepsen:

In response to your letter of August 5th, enclosed are copies of two recent short articles, one by Herbert Stein and one by myself. I think that these articles effectively address the substantive issues that you raise.

Yours sincerely,

Herschel I. Grossman

HIG:mem

7/82

FISCAL POLICY
AND THE CURRENT RECESSION

Herschel I. Grossman

This article is excerpted from a paper prepared for presentation at a symposium on Current Problems of Public Finance in the United States and Japan, sponsored by the Japanese Ministry of Finance and the National Bureau of Economic Research, Tokyo, July 19 and 20, 1982.

Herschel Grossman is Merton P. Stoltz Professor in the Social Sciences and Professor of Economics at Brown University and a Research Associate of the National Bureau of Economic Research.

The alleged evils of fiscal deficits are a popular theme in American political rhetoric. In Congressional debates, the size of the federal budget deficit always generates considerable heat and political posturing. In presidential elections, the party out of power regularly uses budget numbers to indict the party in power for fiscal irresponsibility. In 1976, candidate Carter attacked President Ford for allowing large fiscal deficits and asserted that a Carter Administration would balance the Federal budget. In 1980, candidate Reagan attacked President Carter for allowing large fiscal deficits and asserted that a Reagan Administration would balance the Federal budget. Even back in 1932, candidate Roosevelt attacked President Hoover for allowing large fiscal deficits and asserted that a Roosevelt Administration would balance the Federal budget.

Belying the admonitions of candidate Reagan, both the Office of Management and Budget and the Congressional Budget Office early in 1982 projected deficits in the Federal budget over the next few years exceeding $100 billion annually. In light of American political tradition, it is not surprising to see Washington political circles quickly focus on these numbers as the most worrisome aspect of current economic policy. This latest outcry, however, involves a substantial shift away from the usual claim that budget deficits bear primary responsibility for inflation. With inflation declining rapidly, this indictment looses its prima facie appeal.

Recent expressions of concern instead emphasize other alleged bad consequences of fiscal deficits. Many commentators, mainly former public officials and former government economists, warn that large fiscal deficits depress capital formation and thereby retard prospective improvements in productivity and future economic growth.

Most of the political debate, however, does not take this long-run perspective on the effects of fiscal deficits. Politicians tend to be concerned mainly about the immediate economic situation. In this spirit, many public officials of both parties, as well as some government and business economists, express serious concern that current fiscal prospects are inhibiting "economic recovery" and, in wilder moments, suggest that reduction of anticipated fiscal deficits is both necessary and sufficient for this "economic recovery".

These claims have caused academic economists to bemoan yet again the confused and fickle nature of popular impressions about economic policy. Are these politicians claiming that budget deficits can worsen and prolong a recession? If so, they apparently have not learned the basic lessons that conventional macroeconomic analysis teaches about fiscal policy. They seem as misguided as the presidential candidates were in the election of 1932, mindlessly blaming fiscal deficits for anything that goes wrong in the economy.

Two misunderstandings seem to underlie both the popular discussion and the attendant confusion about the relation between fiscal policy and the current economic situation. One misunderstanding involves the basic causes and the effects of the current recession. The popular discussion does not fully appreciate that the current recession is largely an unavoidable side effect of a deliberate tightening of monetary policy aimed at reducing the entrenched inflation that had built up during the 1970's.

Both economic analysis and historical experience imply that to reduce the actual inflation rate below the inflation rate that people have already come to expect, monetary and fiscal policy together must become sufficiently restrictive to depress aggregate demand for goods and services below aggregate supply. In the current situation, although fiscal policy has been stimulating aggregate demand, monetary policy has been tight enough to have a dominant disinflationary effect. Unfortunately, a net contraction of aggregate demand also produces a recession in aggregate economic activity. Both the rapidity with which the inflation rate declines and the amount by which aggregate economic activity falls below its normal trend depend directly on the net tightness of monetary and fiscal policy.

This analysis implies that the recent sharp reduction in the inflation rate is directly related to the severity of the current recession. The recession, of course, need only be a transitory aspect of the disinflation process. If monetary and fiscal policy together remain consistent with a reduced long-run inflation rate, as the actual inflation rate declines and inflationary expectations adjust to this new reality, the economy's natural processes of recovery work to restore aggregate demand and to bring aggregate economic activity back to its normal growth path. The length of time that this full sequence of recession, disinflation, and recovery takes depends on the structural characteristics of the economy that determine the responsiveness of inflation to aggregate demand and on the rapidity with which inflationary expectations decline. These dynamic factors are neither well understood nor easy to predict. It is clear, however, that an attempt to speed up the recovery by shifting back to a more expansionary combination of monetary and fiscal policy risks generating a resurgence of inflation.

The early official projections of the Reagan Administration envisaged only a gradual and modest reduction in inflation and only a brief and mild accompanying recession. Both the recent large decline in inflation and the severity of the current recession reflect inability to make reliable macroeconomic forecasts and to manage aggregate demand with any degree of precision. As the recession has worsened, however, the Reagan Administration has welcomed the rapid reduction in inflation and, in a departure from the behavior of its predecessors, has not pressured the Federal Reserve to loosen monetary policy in order to stimulate aggregate demand. The Administration has supported continued restriction of the growth of monetary aggregates as necessary to avoid a possible reversal of the gains against inflation already achieved.

This discussion suggests three main points. First, even if the severity of the current recessions was unexpected, its main cause, tight monetary policy, is no mystery. Second, if the Reagan Administration and the Federal Reserve were willing to relax or to abandon the objective of a long-run reduction in inflation, they could reverse monetary policy and stimulate aggregate demand enough to produce rapid improvement in aggregate economic activity. Third, the controlling factor in the current economic situation is that the Administration and the Federal Reserve apparently have made a deliberate decision not to follow this course. Instead, they seem prepared to wait out the painful natural adjustment process necessary to achieve sustained non-inflationary economic growth.

This commitment to keep monetary policy as tight as necessary to rule out a resurgence of inflation means that other factors, such as current and prospective fiscal policy, cannot have more than a minor effect on aggregate demand and economic activity. The current recession is an essential part of the process of disinflation and the objective of sustained disinflation is the true obstacle to rapid economic recovery.

A second misunderstanding about the relation between fiscal policy and the current economic situation results from a difference between popular and academic perceptions of the current recession. The official arbiters of the NBER define a recession in terms of measures of aggregate economic activity. The impact of the current recession across industries, however, appears to be unusually uneven. The markets for housing and consumer durables, especially automobiles, are especially depressed, whereas activity in other sectors, especially, services, has held up much better.

Popular concerns about the current recession concentrate on the weakness of demand in the depressed sectors. Politicians are understandably more sensitive to distress expressed by constituents whose livelihood come from these sectors than to abstract measures of aggregate economic activity. Given this narrowly defined perception of the maladies that the current recession represents, the claim that fiscal deficits are inhibiting recovery makes some sense.

Fiscal deficits put upward pressure on real interest rates and other measures of the cost of capital and, accordingly, tend to depress investment demand. The immediate effect of the current fiscal situation on real interest rates has been especially pronounced both because monetary policy has tightened to offset the inflationary effects of the federal fiscal deficit and because the recent liberalization of investment tax credit and depreciation rules has given an offsetting stimulus to demand for investment in plant and equipment. In addition to making interest rates higher than monetary policy and the size of the fiscal deficit alone would seem to require, these changes in tax rules have shifted the bulk of the depressing effect of fiscal deficit to other forms of investment, like housing and consumer durables. Thus, it seems correct to say that fiscal policy is responsible for the unusually uneven inter-industry impact of the current recession and, specifically, for the especially depressed state of the housing and consumer durables sectors.

The popular discussion recognizes correctly that reductions in current and prospective fiscal deficits, brought about by a combination of decreases in government expenditures and increases in taxation, would help these depressed sectors. A reversal of the tax stimuli to investment in plant and equipment would be especially useful in this regard. What the popular discussion overlooks is that such changes in fiscal policy themselves would produce a combination of decreases in government purchases and decreases in private demands for goods and services and, thus, only would shift the burden of the recession to other sectors. Even worse, with no change in monetary policy, these decreases in aggregate demand, associated with higher taxes and reduced government expenditures, probably would outweigh the immediate increase in total investment demand resulting from reduced fiscal deficit. The net effect on aggregate economic activity would be negative. The key factor in this outcome is that lower interest rates would cause asset holders to try to increase their money balances and, thus, to reduce the velocity of circulation of the given monetary aggregates.

To sum up, although a decrease in real interest rates will be one aspect of the economy's natural processes of recovery from the recession, and although a reduction in the fiscal deficit would cause real interest rates to decline, it does not follow that expenditure decreases or tax increases would cause aggregate economic activity to revive. An analogy may be instructive. As a painful wound heals, the pain eases. Sufficient intake of alcoholic beverages also produces a feeling of no pain. It does not follow, however, that getting drunk promotes healing.

It is, of course, possible that the Federal Reserve would loosen monetary policy somewhat to offset the probably depressing effect of a tax increase or expenditure reduction on aggregate economic activity. But, as stressed above, as long as monetary policy remains committed to tight control of aggregate demand in the interest of disinflation, aggregate economic activity cannot increase except through the economy's natural process of recovery. Although fiscal policy can influence the location of the pain associated with the current recession, the recession itself is a result not of fiscal deficits, but of the apparent commitment to achieve a long-run reduction in inflation.

the AEI economist

American Enterprise Institute for Public Policy Research July 1982

Problems in the Conduct of Monetary Policy

Herbert Stein

Summary

The unique and essential contribution of monetary policy to good performance of the economy is to make the value of money predictable. That means to make the price level predictable, which as a practical matter requires a stable and low—ideally zero—rate of inflation. That is all monetary policy can do for us. There are many problems monetary policy cannot solve; if they can be solved at all, they have to be solved by something else. But predictability of the price level would be an immense contribution to good performance of the economy, and nothing else can deliver that if monetary policy does not.

The instrument by which monetary policy operates on the price level is the quantity of money (or, more immediately, open-market operations, discount rates, and reserve requirements that control the quantity of money). The quantity of money is not an end in itself. We seek the behavior of the quantity of money that will yield the desired behavior of the price level. A long-run connection between the quantity of money and the price level is well established. The connection is not, however, constant in the short run, permanent, or predictable—precisely. The problem is how to deal with the looseness of this connection. At one extreme is the idea of freezing the rate of growth of the quantity of money "forever," recognizing that some unpredictable variations of the price level would remain but expecting those to be less than under alternative systems. At the other extreme is the idea of accepting the goal of stabilizing the price level and leaving it up to the monetary authority to adjust the quantity of money as it considers appropriate to achieve that goal. Neither extreme is satisfactory. Even the most devout monetarist would probably accept the fact that changes in the state of the economy could make adherence to the chosen rate of monetary growth unsuitable. Complete flexibility in the management of the quantity of money, however, even with a commitment to stabilizing the price level, exposes the system excessively to uncertainty, errors, and political pressure. The need is to find some intermediate position that would make room for adapting monetary policy to strong evidence that the appropriate rate of monetary growth has changed without opening the door to destabilizing and politically motivated vacillation. That is what the Federal Reserve seems to be groping for in assuring the country both of its firm intention to stick by its money supply targets and of its willingness to change those targets or depart from them if the evidence of the need is very great.

> *"The quantity of money, despite what seems to be implied in monetarism, is not a basic objective of policy. Some people have jumped from this fact to the conclusion that no attention should be paid to the quantity of money."*

The difficulty of defining the proper monetary policy is exceptionally great today because we are not in the position of attempting to stabilize an existing low rate of inflation but are in a process of trying to reduce an inflation that is too high. We do not know what is the best rate at which to do this, and we do not know how the relation between the money supply and the price level might differ from the past relation during this unusual transitional period. In my view the growth of the money supply since late 1979, when the present anti-inflation effort began, has been close to what one might have desired to achieve the necessary transition to a noninflationary world, and the consequences for real output and employment have been about what might have been expected as the byproducts of that transition. There are two questions about this experience with disinflationary monetary policy. First, the velocity of money—the ratio of GNP to the quantity of money (M1)— has fallen unusually far below its trend in the past three quarters. Does this mean that velocity will remain significantly lower than past experience would suggest, in which case money should be made to grow

more rapidly? Second, does the recent rate of unemployment indicate that monetary policy is aiming at too much reduction of the inflation rate and that we can and should "settle" for an inflation rate close to what it is now—perhaps around 6 percent? I believe that the answers to both of these questions are negative, but they are not questions that can be answered with a high degree of certainty.

This has been a year filled with criticism of monetary policy. There have been complaints that monetary policy is too loose, too tight, or too volatile. There have been complaints that it is focused too much or too little on the monetary aggregates. This is not surprising. Now that monetary policy is considered the main determinant of the economy's performance, it is naturally blamed for every failure of that performance to match our expectations—and such failure, in greater or less degree, will always be detectable.

> *"If it is true that we are not really interested in the quantity of money, it is also true that we are not really interested in the price of gold or in the price of a basket of a limited number of homogeneous commodities. Those prices are of interest to us only insofar as making them predictable contributes to making the price level predictable."*

What is missing from the current discussion is any articulation of how monetary policy should be conducted and what can reasonably be expected from it. This is obviously a logical prior requirement for judging the past and prescribing the future of monetary policy. The purpose of this essay is first to give my view of what is known and not known about the conduct of monetary policy in general and then to see what light that throws on recent performance and near-term options.

The General Strategy of Monetary Policy

The primary objective of monetary policy is to make the *value* of money predictable, which means to make the purchasing power of money, or the price level, predictable. The quantity of money, despite what seems to be implied in monetarism, is not a basic objective of policy. Some people have jumped from this fact to the conclusion that no attention should be paid to the quantity of money. Instead, since the main objective is to make the price level predictable, they would proceed directly to a policy of stabilizing the price of some "thing," by standing ready to buy or sell it at a fixed price. This thing in most formulations is gold. But since the report of the Gold Commission tarnished gold more than a little, interest has revived in the idea that the thing should be a basket of commodities, like tin, copper, wheat, oil, and so on.

It is, however, too big a jump to conclude from the fact that the main objective is predictability of the price level that the quantity of money can be disregarded. The point is that policy with respect to the quantity of money is important and useful insofar as it is important and useful in making the price level stable. If it is true that we are not really interested in the quantity of money, it is also true that we are not really interested in the price of gold or in the price of a basket of a limited number of homogeneous commodities. Those prices are of interest to us only insofar as making them predictable contributes to making the price level predictable.

In fact, the distinction commonly made these days between price and quantity rules for monetary policy is a distraction from the main issue. The monetary authority cannot avoid controlling the quantity of money. The question is, By what criterion should it control the quantity of money? Should the quantity be enough to keep the exchange rate between money and gold or some other thing constant? Or should the quantity be determined by some other rule, such as that it should grow by 3 percent per year?

The recent discussion of stabilizing the price of gold or of some short list of commodities has not established the merit of such a policy. But it has directed attention to the standard by which we should judge any monetary policy, including a policy of stabilizing the growth rate of the quantity of money. That is, the discussion has reminded us that stabilizing the growth rate of the money supply is not an end in itself but has to be judged by its contribution to something else.

To say that the main objective of monetary policy (at least in "the long run," that escape hatch of economists) is to make the price level predictable does not imply lack of concern with the "real" side of the economy—output, employment, and unemployment. The implication is that predictability of the price level is the maximum contribution that monetary policy can make to the real side of the economy. If the future value of money is known to employers and employees, to borrowers and lenders, when they enter into arrangements for employment or credit, the expectations they had when they made those arrangements will come true, at least as far as the value of money is concerned. They will find themselves supplying the amount of labor or employment or credit that they knowingly and willingly agreed to supply, which is the maximum amount that they should or in the long run will supply. If, for example, workers and employers agree on wage contracts that assume prices will rise by 10 percent per year and they do not actually rise by that much, employers will be unable to employ all the workers they expected to employ, and there will be unemployment. If prices rise by more, workers will not get the real wages they expected, and there will be disappointment, dissatisfaction, and strife as they seek correction.

The system works best if people get the real values they bargained for; since bargains are made in dollars, the system works best if people know in advance what the dollar is going to be worth. Giving priority to making the price level predictable constitutes a change from what would have been the common attitude ten years ago. Then economists and policy makers would have given equal or greater weight to "full employment" as the goal of monetary policy. But this has been seen to be a self-defeating policy. How much unemployment was full employment—whether 4 percent or 5 percent or 6 percent—was never known. The goals for unemployment were always set unrealistically low, for clear political reasons. The attempt to reach these goals caused and relied on an accelerating inflation, which could only be effective in reducing unemployment while it was unexpected. If the inflation continued to accelerate, it could not continue to be unexpected. In the end the acceleration would have to stop, and unemployment would rise, probably higher during a transition period than it would have if the inflationary process had never been started. As far as monetary policy is concerned, the proper employment objective is whatever level of employment the markets generate when the price level is predictable. Other policies, such as training, may of course be used in an attempt to raise that level of employment.

The objective specified here—predictability of the price level—is both more and less than stability of the price level. Stability would not be sufficient by itself if the stability was not predictable, although long continuation of stability would almost certainly lead to the correct prediction of stability. Stability would not be necessary if some other pattern could be predictable. The economy could work with an accurately predictable 10 percent rate of inflation or a 2 percent rate of deflation or with annual alternations between the two. It is extremely unlikely, however, that any such pattern could be firmly predicted. There would be no way to explain the choice of such a pattern except as a concession to some expedient, and that would lead to a belief that the pattern would be sacrificed to some future expedient. Thus, as a practical matter, predictability of the price level probably requires something close to stability of the price level.

A special problem exists when, as has recently been our case, we start with an inflation rate that has been high for some time. On the one hand, the more promptly the inflation rate was reduced to a negligible level, the more certain would be the predictability of the price level. On the other hand, the more rapid the decline of the inflation rate, the more people who counted on continuation of the past inflation rate would be disappointed and hurt, with damage to the economy as a whole. There is no objective way to strike the optimum balance between these two considerations. This is a crucial aspect of our present situation, and I shall return to it later.

If this problem of the transitional rate of inflation is set aside, a formal schema for arriving at monetary policy may be described as follows:

Suppose that the objective is to stabilize the rate of inflation at zero. Then:

1. *If* the normal growth of real output (the growth that would occur if the price level were stable) is steady at 3 percent per year, the required growth of nominal GNP is 3 percent per year.
2. *If* the velocity of money (the ratio of nominal GNP to the money supply) rises steadily at 3 percent per year, the required growth of the money supply per year is zero.
3. *If* the money multiplier (the ratio of the money supply to the monetary base—the sum of currency and bank reserves—which is what the Federal Reserve controls) is constant, the required growth of the monetary base per year is zero.

These propositions are simply matters of arithmetic. If the three assumptions about normal real growth, velocity, and the money multiplier were correct, we would have the best of all monetary policy worlds. One could announce a highly specific rule of monetary policy, a rule that the Federal Reserve would be able to carry out and for which it could be held responsible. That rule would be to keep the monetary base constant. If that was accomplished, the price level would be constant.

> *"The system works best if people get the real values they bargained for; since bargains are made in dollars, the system works best if people know in advance what the dollar is going to be worth."*

The rub, of course, is that the three assumptions are not literally and precisely correct. The normal growth of real output, the velocity of money, and the money multiplier are not among the natural constants, like the speed of light. They vary, unpredictably, in both the short and the long run. Freezing the instrument of policy—the monetary base—would leave the price level unpredictable to the extent that the other conditions were unpredictable. To make the price level predictable would require that the instrument be varied to offset variations in normal output, velocity, and the money multiplier—meaning, of course, that the variation of the instrument would have to be correct. If the variation was incorrect by more than a certain amount, the price level would be more unstable and unpredictable than it would be if the instrument had been frozen.

Faced with this dilemma, some students of this question have opted for freezing the instrument, or coming close to it. Milton and Rose Friedman, for example, have proposed a constitutional amendment requiring that annual changes in the monetary base be confined to 3 to 5 percent per year. (They say that drafting an amendment in the monetary field is difficult because "it is so closely linked to the particular institutional structure.") Others would only give the Federal Reserve a mandate to stabilize the price level, leaving them free to use their monetary instruments for that purpose as actual and forecast conditions dictate.

"The Federal Reserve may be visualized as trying to tread a narrow path between a rigidity that would have been unsustainable—for political reasons if for no other—and an opportunistic flexibility that would only further validate skepticism about the seriousness of its intention to reduce inflation."

There is great attractiveness to the idea of some intermediate position, in which the growth rate of the money supply or the monetary base neither would be locked in forever nor would respond to every passing statistic or political wish. One suggestion in this field, by William Fellner, is that the growth rate of the money supply should be fixed for the duration of a business cycle, on the basis of what the velocity of money had been in the previous business cycle.[1] This would provide an objective way of adjusting the growth rate of money to changes in the trend of velocity without attempting to offset shorter-run changes of velocity.

Another possibility would rank the targets and instruments of monetary policy according to their degrees of fixity and flexibility. The administration and the Federal Reserve would agree on and announce a long-run target path for the behavior of the price level—presumably, after the present transition, essential stability. They would agree on and announce a target path for nominal GNP for a period of five years, a path believed to be consistent with the longer-run target path of the price level. The Federal Reserve would announce each year its target for the money supply, a target believed to be consistent with the five-year path of nominal GNP. Such a procedure would give the private sector a clear statement of the government's intentions and provide some protection against cumulative inflation. It would also fit with the requirements of budget making, which now call for five-year economic projections as the basis of five-year budget projections. This procedure would permit the administration to show how the budget would come out if the economy moved along a path that the administration and the Federal Reserve agree is feasible and desirable and that the Federal Reserve will try to achieve. That is *the* relevant calculation to show whether the budget policy is the desired one. Tax and expenditure programs that would yield the desired budget outcome (a balanced budget, for example) only under economic conditions that are not feasible or that the Federal Reserve will not try to achieve are not satisfactory programs.

As compared with previous Federal Reserve strategies, the policy initiated in October 1979 was a step in the direction of commitment, with respect both to the instruments and to the objectives of policy. More em-

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[1] "Criteria for Useful Targeting: Money versus the Base and Other Variables," *Journal of Money, Credit, and Banking*, in press.

phasis would be placed on achieving the annual targets for monetary policy and on the gradual reduction of the targets. And the Federal Reserve has declared itself more single-mindedly devoted to reducing the inflation than it has been in the past. These statements, the execution of policy, however irregular, and the support of the administration, however vacillating, have increased the credibility of the anti-inflation effort and contributed to its success.

The policy does, however, imply much less commitment to either stability of monetary growth or stability of the price level than is entailed in the strategies discussed above. The annual targets for the money supply specify a fairly wide range of permissible growth rates—typically a range of three percentage points, as from 2½ percent to 5½ percent—and there is no indication of the considerations that would cause the Federal Reserve to operate at one end of the range rather than the other. Ranges are set for several different measures of the money supply, leaving uncertain what policy would be if the measures diverged. The possibility is left open that money growth for the year might be outside the target range, and uncertainties about the year-to-year behavior are increased by large departures from the target range during the year. Moreover, the fact that targets are set for only one year at a time leaves questions about the Federal Reserve's longer-run intentions. These uncertainties about the behavior of the money supply are not much compensated for by the commitment to reducing inflation because there is no commitment to reduce inflation at any specified rate.

Critics of the policy complain that the Federal Reserve has missed the opportunity to restore credibility and predictability. They have not achieved even as much credibility as their actual, and probably as their intended, policy deserves because they have not enunciated their policy with sufficient firmness and precision. As a result inflationary expectations have not subsided as rapidly as they might have, and the whole disinflationary process has been more difficult than it need have been.

The Federal Reserve has also been criticized, however, for being too rigidly and dogmatically committed to its money supply targets. This is said to have prevented it from responding to changes in economic conditions, which have shown up in a sharp increase in the demand for money, and therefore from preventing an excessive rise of real interest rates and of unemployment.

A possible justification for the policy followed since October 1979 is that in the transition to a lower rate of inflation both the path of velocity and the feasible path of the price level are extremely uncertain. A precise commitment about either the path of the money supply or the path of the price level might have been impossible to keep. Arguably, to have made precise commitments that were not kept would have been more injurious to the credibility of policy and the predictability of the price level than to have been vaguer and more flexible from the outset. The Federal Reserve may be visualized as trying to tread a narrow path between a rigidity that would have been unsustainable—for political reasons if for no other—and an opportunistic flexibility that would only further validate skepticism about the seriousness of its intention to reduce inflation.

What was, or would have been, the correct strategy we may never know. Some light may be thrown upon it, or at least the relevant questions may be clarified, by looking more closely at the experience of the recent past, to which we now turn.

Monetary Developments—1979 to 1982

To evaluate the current stance of monetary policy, some standard is needed other than "Do we like the present state of the economy?" There is no monetary policy that guarantees happiness, especially happiness at every moment. The standard we need is a monetary strategy that, carried out consistently over a long period, promises on the whole, not moment by moment, a more satisfactory performance than other possible strategies. What we should ask about the current stance of monetary policy is whether it conforms to such a strategy.

"To evaluate the current stance of monetary policy, some standard is needed other than 'Do we like the present state of the economy?' There is no monetary policy that guarantees happiness, especially happiness at every moment."

For this purpose I propose to describe what seems to me a reasonable strategy to have adopted in October 1979 and to compare recent policy with it:

During 1979 the GNP deflator rose by 8.6 percent, and nominal GNP rose by 11.7 percent. It is imperative to initiate and to carry out a process that will reduce inflation to a low rate, say 2 percent. The normal growth rate of real output in a noninflationary world might be in the neighborhood of 3 percent. Thus the growth rate of nominal GNP should be 5 percent. How quickly should that decline be achieved? There are people who think it should be done immediately, cold turkey. But that risks starting a cumulative depression that could get out of hand. To put the reduction off too long, however, would raise doubts about whether the intention to achieve it was serious. Five years seems a reasonable intermediate *period. It has the incidental advantage of reaching the target by the end of the next presidential term, which should put some pressure on the president to help achieve it since he will be measured by success in this respect.*

What the optimum path for nominal GNP from 11.7 percent at the end of 1979 to 5 percent at the end of 1984 would be no one knows. In the absence of information, the safest course is to aim for a smooth path.

How much growth of the money supply is required to yield that path of nominal GNP will depend on the behavior of velocity—the ratio of nominal GNP to the money supply. In the ten years 1969–1979 velocity (of M1) rose by 3 percent per year on the average. This same rise will be assumed for the next five years. In combination with the prescribed path for nominal GNP, this tells how the money supply should grow. The rise of velocity will, of course, not be steady at 3 percent from quarter to quarter. It will fluctuate as it has in the past, for a variety of reasons. Fluctuations of velocity will cause departures of nominal GNP from its desired path, in either direction. The policy in general will be not to try to compensate for these fluctuations of velocity by variations of money growth, mainly because opening the door to this permits too easy an excuse for abandoning the disinflationary effort. If, however, there is exceptional evidence that the trend of velocity is significantly different from the assumed 3 percent growth, a revision of the money supply path will be considered.

If nominal GNP keeps at or near its prescribed path, it is expected that the inflation rate will decline. That will probably not happen smoothly. The inflation rate may remain high or even accelerate at first, reflecting past momentum and commitments, and then decline rapidly as the expectation strengthens that it will come down to stay. If this happens, real output will be sluggish and may even decline at first and will then revive. There may be further irregularities. The slow rise of real demand, as monetary growth decelerates and prices continue to rise rapidly, may cause accumulation of inventories for a while, and a subsequent decumulation may lead to a sharp contraction. Associated with such a contraction may be a temporary decline of the inflation rate below its expected trend. Monetary policy will not be deflected from its intended path unless such a contraction is extremely large or unless there is clear evidence that the initial assumption about the normal trend of output is incorrect.

I am not suggesting that the Federal Reserve actually formulated or was guided by such a strategy. I only want to suggest that it would have been a reasonable strategy to adopt in October 1979 and to discuss the questions that arise about implementation of such a strategy.

FIGURE 1: NOMINAL GNP
(seasonally adjusted annual rate in billions of dollars)

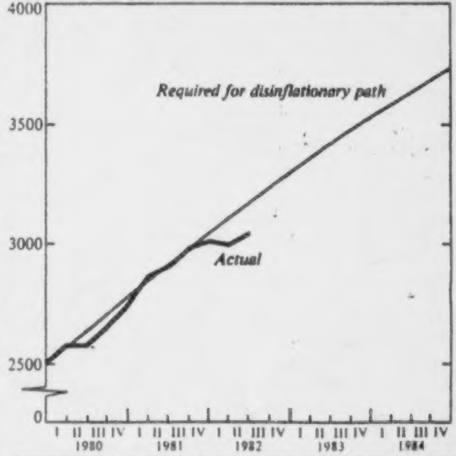


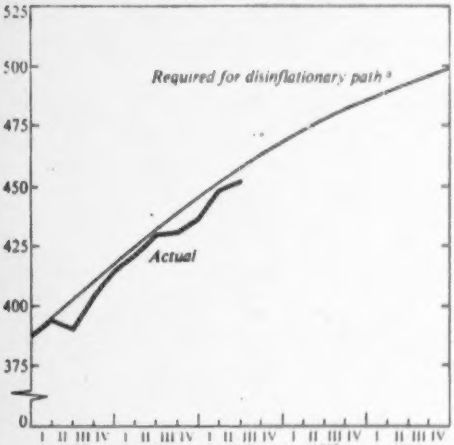
Figure 1 shows a smooth path of nominal GNP that would have reduced its growth rate from 11.7 percent in 1979 to 5 percent at the end of 1984. As can be seen, until the third quarter of 1981 the actual course of nominal GNP was quite close to this path. Since then actual nominal GNP has fallen further and further behind the path. In the second quarter of 1982 nominal GNP was about 4 percent below the path.

Figure 2 shows a smooth path for the supply of money (M1) that would have been consistent with the projected path of nominal GNP if velocity had risen steadily at 3 percent per year. Actual money supply lies fairly close to this path, being 1 percent below it in the second quarter of 1982.

As is implied in the comparisons above, velocity did not rise along the 3 percent growth path, but fell below it. Figure 3 shows what velocity would have been on the 3 percent growth path and what it actually was. It should be noted that actually velocity fluctuated *around* the 3 percent path, sometimes above it and sometimes below it. In the second quarter of 1982 velocity was about 3 percent below the 3 percent growth path.

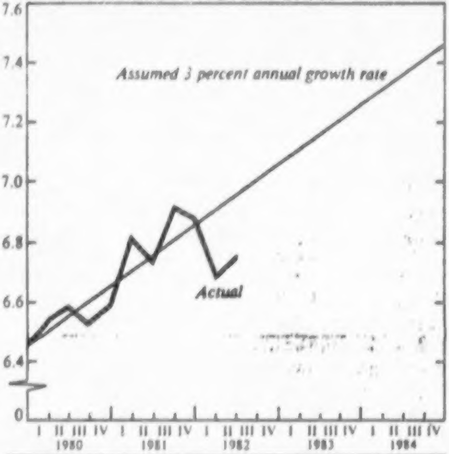
In the period since the end of 1979, the rate of inflation has slowed, from 8.6 percent during 1979 to 5.3 percent in the second quarter of 1982. During this same period total output has fluctuated but has made no net gain, being 1 percent lower in the second quarter of 1982 than in the fourth quarter of 1979. Essentially, even though irregularly, the inflation has slowed as the

FIGURE 2: MONEY SUPPLY (M1)
(billions of dollars)



ªAssumes 3 percent per year velocity growth.

FIGURE 3: VELOCITY OF M1



rise of nominal GNP has slowed.

The first question raised by these developments relates to velocity. How is the slow velocity growth of the past three quarters to be interpreted? Is it a random or cyclical fluctuation, which should not be matched by an acceleration of monetary growth because speeding up monetary growth would push nominal GNP above its desired path when velocity returned to its 3 percent trend? Or is it a more durable change, which requires more rapid growth of the money supply if we are to get on the desired nominal GNP path?

This is a large and critical question. In the past three quarters the velocity of M1 fell at an annual rate of 3 percent rather than rising at the 3 percent that is about the historical average. If the growth of the money supply were to be adapted to a 3 percent annual decline of velocity rather than to a 3 percent rise, that would be a big change indeed. But the short-term path of velocity has historically been quite irregular. The slowdown of velocity growth in the past three quarters was unusually large, but more evidence would seem to be required to show that there was a new trend. The argument is sometimes made that the trend of approximately 3 percent per year velocity growth was observed in a period when interest rates and prices were rising, which made people want to hold less money in relation to their incomes. On this basis one might expect now to enter a period in which velocity grows more slowly as disinflation proceeds. In countries where there has been an abrupt end to hyperinflations, the demand for money has increased sharply (velocity has decreased sharply). But the connection has not been so clear here, aside from very short-term fluctuations. Velocity has risen at less than its trend rate since the end of 1979, although interest rates are as high now as they were then. If the basic strategy is to stick to the path of monetary restraint unless there is *clear* evidence that the trend of velocity has changed, so as to maximize the predictability of policy, the case for accelerating monetary growth does not seem strong.

Probably a more critical issue is whether the planned path for slowing the growth of nominal GNP is the correct one. Real output has, on the whole, been flat for two and a half years, and unemployment has risen to 9½ percent. It is true that actual nominal GNP has fallen below the planned path, but still the flatness of real output raises the question whether even the planned rise of nominal GNP is fast enough. This question is directly related to the question of the feasible and desirable reduction of inflation. On the path of deceleration I have described here, nominal GNP would now be rising by 8½ percent a year, and that rate would fall to 5 percent by the end of 1984. But this path will be consistent with an economic "recovery" and reduction of unemployment only if the inflation rate falls to around 2 percent.

Is such a reduction of the inflation rate feasible? Experience so far is not illuminating, one way or the other. The inflation rate has fallen by three percentage points in two and a half years. This is a fast enough reduction, if continued, to reach the 2 percent rate by the end of 1984. But there is reason to believe that the decline so far has been exceptional, reflecting in part the change in oil prices, the rise of the dollar exchange rate, and the slowdown of the economy. Many economists expect that the inflation rate will be very sticky around 6 percent, aside from temporary factors, and that to drive it lower will require a very long period of high unemployment. They believe, moreover, that to stabilize the inflation rate around 6 percent would be possible, would be a substantial improvement over our recent experience, and should therefore be the goal of policy. Having this less ambitious goal for the reduction of inflation, they tend also to count on a somewhat more rapid growth of real output than might be feasible during a transition to, say, 2 percent inflation. So they aim at annual nominal GNP growth around 10 percent rather than the decline to 5 percent involved in my assumptions. This obviously calls for faster growth of the money supply than we have been getting or than is assumed in my projections for the future.

"The question is whether a policy *of stabilizing the inflation rate at 6 percent will be interpreted as a policy of accepting an inflation rate that has no other claim to validity except that unfortunate experience has driven us to it and we do not have the stamina to undo it."*

There is a further difficulty here: that the budget projections of both the administration and the Congress assume nominal GNP growth around 10 percent per year in 1983, 1984, and beyond. Thus, if the money supply does not expand enough to support such a growth rate, the prevailing budget estimates will be falsified, and the deficits for future years will be even larger than now projected.

The idea that there is an "underlying" inflation rate of 6 percent—meaning that rates above that are generally transitory and getting below that is exceedingly difficult—is not new. In the *AEI Economist* for December 1977, I discussed this idea in an article entitled "Inflation—Stuck at 6 Percent?" What can be said now is about what could be said then. Whether it is possible to stick at 6 percent, however, is also unknown. The question is whether a *policy* of stabilizing the inflation rate at 6 percent will be interpreted as a policy of accepting an inflation rate that has no other claim to validity except that unfortunate experience has driven us to it and we do not have the stamina to undo it. An inflation goal reached by this route might not have the desired credibility and predictability and therefore might be impossible to sustain. Perhaps something more can be said for the 6 percent goal today than could have been said in 1977. A 6 percent inflation rate today represents some progress from where we have recently been, and one can legitimately say that the country has showed a certain amount of determination in getting down to it. But the question of the credibility and therefore the sustainability of such a rate remains.

The question of the goal for the inflation rate is the most critical issue in monetary policy today. What monetary policy should be—how rapidly the money supply should be made to rise—depends on what the goal for the inflation rate is. Differences of opinion about the proper rate of monetary expansion largely reflect different ambitions about the inflation rate. It is important that the target inflation rate be the "right" one—achievable and sustainable. It is also important that the target should be known and that there be a firm commitment to it, so that private individuals and businesses in their decisions and the government in its budget planning can estimate the future value of money with confidence.

July 1982

THE FED'S POST-OCTOBER 1979 TECHNICAL OPERATING PROCEDURES UNDER LAGGED RESERVE REQUIREMENTS: REDUCED ABILITY TO CONTROL MONEY

George G. Kaufman*

On June 28, 1982, the Board of Governors of the Federal Reserve System voted by a split 5 to 2 margin with Chairman Volcker abstaining to partially abandon the system of lagged reserve requirements adopted in 1968 and to return to a modified contemporaneous reserve requirement system in 1983. The new system calls for a two day lag for reserves against checkable deposits and a two reserve period lag for all other reservable deposits. At the same time, the reserve period would be lengthened from one to two weeks. The changeover was motivated by an attempt to increase control over monetary aggregates and was, in part, a response to the dissatisfaction expressed by some with the increased short-term volatility of money supply. This technical change may be viewed consistent with the thrust of the widely publicized October 1979 change in operating procedures.

On October 6, 1979, the Federal Reserve changed its "open market operating procedures to place more emphasis on controlling reserves directly so as to provide more assurance of attaining basic money supply objectives."[1] The change was widely expected to increase, at least in the near-term, volatility in short-term interest rates as the "new procedures entail greater freedom for interest rates to change over the

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short-run in response to market forces" and the Federal Open Market Committee widened the target intermeeting Federal funds range.[2] And so it did. The standard deviation in weekly percentage changes in the interest rates on three-month Treasury bills more than doubled from 2.4 percent to 5.3 percent between the four years before and the two years after October 1979. Less expected, however, was an increase in the short-term volatility of long-term rates. The standard deviation in weekly percentage changes in rates on 20-year Treasury bonds jumped from 0.8 percent in the four years before October 1979 to 2.5 percent in the two years after. These results are shown in Table 1. The standard deviations in daily changes in these rates show a similar pattern and are plotted in Figure 1.[3]

Although the Fed warned that "even in evaluating money growth itself, which the Federal Open Market Committee sets as a target in the policy process, recognition has to be given to the likelihood that money growth can vary substantially on a month-to-month basis in view of inherently large and erratic money flows in as vast and complex an economy as ours," the new operating procedures were expected to decrease the short-and long-term volatility in monetary aggregates by reducing the need for changes in reserves to stabilize interest rates.[4] But this did not happen. Both short and long-term volatility in major monetary aggregate series increased after the change. For example, the standard deviation in weekly percentage changes in not seasonally adjusted M1B less currency rose from 1.90 percent in the period January 1975 - October 6, 1979 to 2.13 percent in the period October 6, 1979 - December 2, 1981 (Table 2). Similar results are obtained for alternative definitions of monetary aggregate, alternative sample periods, and seasonally adjusted data.[5] Longer-term, cyclical volatility in M1B has increased even more since October 1979 as is clearly evident in Figure 2.

Thus, the Fed appears to have achieved the worst of both worlds. It has increased the volatility in both interest rates and money supply. This paper analyzes the new operating procedure to identify why this might have occured. The analysis suggests that, in the absence of deliberate Federal Reserve policy to permit greater short-run volatility in monetary aggregates, an important cause of the problem is the inappropriate grafting of a monetary aggregate target on a lagged reserve requirement accounting system. This alone increases the complexity of controlling money supply. But, in addition, within this environment, the Fed has chosen to adopt technical operating procedures that reduce even further its ability to control the money supply.

It would appear that at least in theory the operating procedures for controlling reserves directly would be straightforward. The FOMC could determine either a total reserve growth rate target or a monetary aggregate growth rate target. If the latter, the staff could translate the monetary aggregate target into a total reserve target by estimating the composition of deposits and thereby the appropriate multiplier. The total reserves target is then obtained by dividing the monetary aggregate target by the estimated multiplier.[6] Money supply would respond directly and concurrently to changes in reserves. Because the Open Market Desk controls directly only the System's portfolio of securities, other factors that affect reserves, such as float and borrowing at the discount window, must be adjusted for. In the best of all worlds, these factors, including borrowing, could be predicted. But in reality it may be necessary to respond to them with a brief lag, e.g., one day.

Unfortunately, such a straightforward procedure is not possible under two week lagged reserves accounting, which separates the deposit accounting week from the reserve settlement week.[7] Although any individual bank may obtain its necessary reserves in the reserve settlement week from a variety of sources, for the banking system as a whole, the Fed has to provide all the reserves required by the dollar amount of total deposits established two weeks earlier in the deposit accounting week. Thus, the minimum amount of total reserves in any settlement period is predetermined by events two weeks earlier and is beyond Fed control in that period. Lagged reserves do not merely delay bank response by two weeks; they alter the bank decision making process. To influence the amount of deposits and thereby the money supply in the deposit accounting week, the Fed has to influence bank deposit decisions two weeks before the settlement week when it provides the reserves for that week. Short of rewriting history, this may be achieved in a number of ways that affect the cost of reserves either or both in the current deposit week or in the reserve settlement week two weeks later.[8] The Fed has chosen to do so by affecting the mix of reserves between borrowed and unborrowed reserves.[9] The strategy is based on the assumption that a dollar of borrowed reserves affects banks differently than a dollar of unborrowed reserves either directly by changing the pressures to repay or indirectly by changing the Fed funds rate as banks are "forced" into or out of the discount window. In the words of the Fed:

> Suppose that the demand for money ran stronger than was being targeted...The increased demand for money and also for bank re-

> serves to support the money would in the first instance be accompanied by more intensive efforts on the part of banks to obtain reserves in the Federal funds market, thereby tending to bid up the Federal funds rate, and by increased borrowing at the Federal Reserve discount window. As a result..emerging market conditions reflect or induce adjustments on the part of banks and the public. These responses on the part of banks, for example, could induce sales of securities to the public (thereby extinguishing deposits) and changes in lending policies.[10]

Likewise, Chairman Paul Volcker has testified in 1980 that:

> As soon as monetary growth picked up, our operating techniques 'automatically' began to bring bank reserve positions under mild pressure as use of the discount window increased. The pressure was reinforced on several occasions by reducing the provision of nonborrowed reserves. Total bank reserves have, to be sure, expanded sharply--a mechanical concomitant of the rise in M1--but banks have had to borrow those reserves from the Federal Reserve; we have not supplied them on our own initiative through the open market.[11]

Borrowed reserves are thus the key variable in affecting bank decisions on deposits determination. The higher are borrowed reserves, the lower is the tendency to create deposits, and conversely.[12]

The FOMC assigns the Open Market Desk the task of achieving a specified target growth in unborrowed reserves. As unborrowed reserves are total reserves minus borrowings, this requires that the committee first establish a target or initially assumed level of borrowed reserves that it believes will provide the degree of bank restraint that is consistent with achieving the previously established target money growth. Given the initial amount of unborrowed reserves so determined, the desk operates to increase or decrease the amount from this initial level at some target rate until the next meeting of the FOMC. Although key in establishing the unborrowed reserves target the intially assumed amount of borrowings is not a policy target, per se. If during this intermeeting period, banks demand more reserves than are consistent with the sum of the target change in unborrowed reserves and the initially assumed amount of borrowed reserves, the necessary reserves are provided through the discount window. This temporarily increases borrowings above the initially assumed level and increases the degree of restraint, encouraging banks to slow their deposit growth. Conversely, if banks demand fewer reserves than are provided by the sum of the target change in unborrowed reserves and the initially assumed borrowed reserves, the amount of borrowings will decline below the initially assumed level. This will reduce the restraint pressures on the banks and encourage them to speed up their loan and deposits expansion. In the words of Peter Sternlight, Manager of the Fed's Open Market Account:

> Under this approach monetary growth in excess of path causes increases in borrowings from the Fed, which would be associated with higher interest rates and pressure on the banking system that would, over time, tend to return growth of money supply and reserves toward the desired path. Shortfalls in growth would have the opposite effect, reducing the need for borrowings and thus encouraging lower interest rates and more vigorous monetary expansion.[13]

How is the initial borrowing assumption established? At first, the FOMC did so by "assuming a level of borrowing near that prevailing in the most recent period."[14] But this restricted the FOMC's freedom to change the target money growth. To exert greater control over money growth within the FOMC's framework, it was necessary to estimate the amount of borrowed reserves consistent with the desired target growth rate in money supply. Then the level of borrowing "could be set higher or lower if it were desired to impart some initial thrust toward some greater or lesser pressures on bank reserve positions".[15] Ceteris paribus, borrowings are generally viewed as being determined by the spread between the Fed funds rate and the discount rate.[16] If the discount rate is set, the level of borrowed reserves depends on the Fed funds rate. Thus, in principle if not in practice, determination of the target borrowed reserves that will achieve the target money growth requires that the Fed funds rate that is consistent with the target money growth be estimated first.

But this Fed funds rate was the basic rate that was estimated (and targeted) under the old operating procedures. The new procedures in effect use the same underlying system of equations as the old procedures plus one additional equation. Greatly abbreviated versions of the two systems of equations are shown in Table 3.[17] Before October 1979, the near-term target money supply was believed to be attainable by achieving the target Federal funds rate; after October 1979, the target money supply was believed to be attainable by achieving the target aggregate borrowed reserves. The target Fed funds rate is established by transposing and solving a demand for money type equation containing target values of money supply and predicted values of nominal income for the Treasury bill rate. Money and income are assumed independent of each other in the short-term. The Fed funds rate is then obtained through a term structure equation. The new procedures use the Fed funds rate solution from this equation as an independent variable in the borrowed reserves equation.

But it was in large measure because the appropriate Fed funds rate could not be reliably estimated that the old procedures were abandoned in October 1979. In explaining the changes in procedures to Congress, Chairman Volcker stated that:

> Translation of money stock objectives into day-to-day management of the federal funds rate is effective if the relationship between the public's demand for cash balances and short-term market interest rates is effectively stable and predictable. But in an environment of high and volatile inflation rates the relationship between interest rates and money...is more difficult to appraise.[18]

Likewise, in its directive adopted at the special meeting on October 6, 1979, the FOMC stated:

> The principal reason advanced for shifting to an operating procedure aimed at controlling the supply of reserves more directly was that it would provide greater assurance that the Committee's objectives for monetary growth can be achieved. In the present environment of rapid inflation, estimates of interest rates, monetary growth, and economic activity had become less reliable than before.[19]

Empirically, the new aggregate borrowing equation specifying primarily the Fed funds-discount rate spread as an independent variable appears to be even less reliable than the other equations in the system for a number of reasons. One, the effective discount rate charged banks is not the nominal discount rate posted. The Fed administers the window to ration credit more directly and the degree and quality of administration varies from Fed district to Fed district and even from district home office to district branch. Two, the Fed has periodically imposed a surcharge on borrowings by larger banks in excess of a designated minimum dollar amount and frequency of usage per period. Both the magnitude of the surcharge and the minimum number of times per period borrowings are not subject to the surcharge have been changed. Three, the decision to borrow is likely to be a function of more than the Fed funds rate, and it is unlikely that the Fed funds rate is an appropriate proxy at all times for the spectrum of all other interest rates no less all nonrate forces. Lastly, under a system of lagged reserve accounting and strict unborrowed reserves targeting, the aggregate dollar amount of borrowing in a reserve settlement week is effectively determined by aggregate deposits and required reserves two weeks earlier. Only the indentities of the individual banks tapping the discount window and for how much is determined by interest rates in that week. The aggregate amount of borrowing by the banking system is determined by its estimates of the Fed funds and discount rates in the reserve settlement week during the deposit accounting week two weeks earlier. The equation, of course, also entails considerable simultaneity between the dollar amount of borrowings and the Fed funds rate. Do higher borrowings raise the Fed funds rate or do higher Fed funds rates increase borrowings? As a result, internal Federal Reserve studies by Levin, Goodfriend, and Kasriel and Merris find the aggregate borrowing equation to have low and unstable explanatory power.[20] Likewise, Judd and Throop find that "the average absolute deviation of borrowed reserves from projected levels was...twice as large as either of the other two types of operating errors," namely, errors in hitting the statistically projected multiplier and the level of nonborrowed reserves.[21]

Thus, the new procedures use the statisticaly unreliable output of the system of equations underlying the old procedure as input for an even less reliable equation underlying the new procedure. It follows that the bottom line money supply growth-target borrowings equations is unreliable and entails significant slippage.[22]

Moreover, the money supply-borrowing relationship is asymmetical. Increases in target borrowings, ceteris paribus, are associated with slower monetary growth over the entire range, although the relationship is unlikely to be linear. On the other hand, decreases in target borrowings are associated with faster monetary growth only to the point where borrowing is zero or at a minimum frictional level. At that point, a wide range of faster money growth rates can be associated with the same initial level of borrowings depending on the Fed funds rate. Borrowings becomes a poor target. It was primarily for this reason that the Fed abandoned its borrowing target in the 1930s, when borrowings dropped to near zero, in favor of free reserves (excess reserves-borrowed reserves), which are not restricted to positive values. From this line of reasoning, one would expect that:

1. Short-run (weekly) money supply growth will be more variable for a given borrowings assumption than for a given Fed funds target as the slippage is greater,
2. Money supply will be procyclical if changes in the state of the economy are underpredicted as they often are in periods of strong economic swings because the "correct" initial borrowing assumption is likely to be mis-estimated at least to the same degree that the Fed funds rate target was under the old system,[23] and
3. Acceleration in money growth in periods of weak economic activity will be delayed. Without specific guidance by the FOMC, when assumed and actual borrowings are close to zero, the desk is likely to lower the Fed funds rate only cautiously in progressive steps.

Additionally, although the Fed funds rate is permitted to vary over a wider range, it is unlikely that for a given borrowing target it will vary greatly and that it will remain particularly steady once it hits an upper or lower boundary. At this point, if past performance is a guide, it is unlikely that the borrowing assumption will be changed consistently by enough to moderate the ongoing monetary growth to target rates. An examination of the initial borrowing assumptions in 1980 in Table 4 and the actual pattern of money change in Figure 2 confirms this interpretation.[24] Money growth declined sharply in the second quarter of the year at the same time that the initial borrowing target was lowered from $2,750 million to $75 million and increased even more sharply in the third quarter as the initial borrowing target was increased again to $1,300 million. This suggests that the behavior of money supply within that year would have been little different if a Fed funds target had been used consistent with the old procedure. Indeed, because of the inability to lower the borrowing target below zero in the spring of 1980, the dramatic procyclical swing in money is likely to have been greater than under the old procedure.

A more direct test of the ability of the new procedures to control the money supply accurately is to compare the short-run money growth targets (tolerance ranges) specified by the FOMC at every meeting with the actual changes in money supply in the same period. Unfortunately, the Fed has made this difficult to do. Before October 1979, the FOMC established clear, unchanged two-month targets for M1 and M2 that held for the entire period. Shortly after October 1979, however, the FOMC switched over to longer three- to six-month targets that could be and often were modified at least once during the period. Thus, it is difficult to identify the target against which the actual money change for a period should be compared. The target moves and is frequently revised during the period to correspond more closely to the developing actual rates of money growth. For example, as can be seen from Table 4, on January 9, 1980, the FOMC set targets for the first quarter of the year. It revised these targets at its next meeting on February 5. On March 18, targets were changed and set for the first half of the year, including the first quarter that had almost ended. These targets were revised on April 22, and on May 20 the committee set targets for the last two months of this period, May and June.[25] Thus, the target periods overlap and the evaluation problem is analagous to that of base drift that plagues attempts to measure meaningfully the Fed's ability to meet its longer-term targets.[26]

That lagged reserve accounting has significant unfavorable implications for short-term monetary control was denied by the Federal Reserve. In November 1981, the Board requested public comment on a proposal to introduce more contemporaneous reserve accounting. In its announcement, the Board stated that:

> Contemporaneous reserve requirements (CRR) have some potential for improving the implementation of monetary policy by strengthening the linkage between the reserves held by depository institutions and the money supply. There is some question, however, whether such potential gains would increase short-run volatility in the money market. The Board noted that any potential gains in monetary control should not be exaggerated, in view of the sizable remaining slippages between reserves and money, and in view of the inherent volatility of short-run money flows.[27]

Nevertheless, perhaps bowing to external and internal staff criticism, the Board terminated lagged reserve accounting effective 1983.

In sum, to the extent the post-October 1979 operating procedure through 1982 differs from the pre-October 1979 operating procedure, it has increased the difficulty of attaining the Fed's money supply objectives and has increased the short-term volatility in both interest rates and money supply and the cyclical volatility in money supply. These results are, of course, either accidently or by design, contrary to the Fed's announced intentions. Because the peculiarities of the technical aspects of the new procedures reflect the need to operate in a lagged reserve accounting world, greater control over both interest rates and money supply is best guaranteed by abandoning lagged reserves accounting. Although, as noted in footnote 8, there are alternative ways of influencing deposits under lagged reserves, these means appear considerably less efficient than those that are possible under concurrent reserves accounting. There are at least some officials within the Federal Reserve who remain unconvinced that greater short-run control of the money supply is either desirable or necessary. For example, Governor Lyle Gramley testified in March 1982 that:

> However, several implications for monetary targeting can be drawn from the experience of recent years. First, short-run movements of the money stock have even less meaning than they once did as indicators of monetary policy. What happens to money growth over longer periods is what counts. Second, monetary targets should be expressed in rather wide ranges; the present ranges of three percentage points are certainly not too wide. Third, we need to continue to use multiple targets, rather than to focus on any single measure of money. Indeed, somewhat greater weight may need to be given to the broader monetary aggregates in the future as a consequence of the relative instability of the demand for M1. Finally, we need to stand ready to accept growth of money outside our target ranges--or even to modify the ranges--if changes in the public's asset preferences warrant it.[28]

To the extent that this view is representative, the much heralded October 1979 change to date has represented still another "self-fulfilling Fed prophecy," but one less immediately visible and more difficult for the outsider and even many insiders to recognize.[29]

Whether the degree of monetary control will change in 1983 when more contemporaneous reserve requirements go into effect remains to be seen. Improved means to control money is not synonymous with improved control unless the will to use the means is there. Some have questioned the Fed's will to do so.[30] Moreover, the new system retains two day lags for checkable deposits and effectively four week lags for other deposits. Thus, the Fed still has to signal to the banks the cost of reserves for the last two days of the settlement period against checkable deposits. It may optimally for it do so on the last day of the 12 day overlapping segments of the deposit accounting and reserve settlement periods. By increasing bank uncertainty, such a strategy would encourage the banks to settle as much as possible during the concurrent segment and strengthen the Fed's ability to control money, if it so wished. Alternatively, the Fed could almost force banks to settle in the 12 over lapping days by imposing a large penalty discount rate on borrowings in the lst two days of the settlement period. This would permit it to operate as if the regime were truly concurrent.[31]

FOOTNOTES

[1] Board of Governors of the Federal Reserve System, "The New Federal Reserve Technical Procedures for Controlling Money," January 30, 1980, p. 1.

[2] Board of Governors, p. 1.

[3] Paul L. Kasriel, "Interest Rate Volatility in 1980," Economic Perspectives (Federal Reserve Bank of Chicago), January/February 1981, p. 10.

[4] Board of Governors, p. 8.

[5] The results are also unchanged by omitting the period March 15 to December 31, 1980 when credit controls may have affected the behavior pattern of financial variables and by omitting January 1981 when the maximum shifting of deposits in response to the nationwide introduction of NOW accounts occured. In addition, variability was estimated in demand deposits at member banks only because a change in reporting series on deposits from nonmember banks at yearend 1979 may have increased the reported volatility in these deposits from before that date. The results are not altered materially.

[6] It is evident that, unless the different monetary aggregate measures are perfectly correlated, each will require a different reserve path to achieve. Thus, this procedure requires use of either a single money measure or explicit weights for a composite measure.

[7] It is not clear that the Fed was fully aware of the implications of lagged reserves accounting for money control when it abruptly changed procedures in October 1979 in the midst of a "financial crisis." Discussions of lagged reserves appear in Warren L. Coats, "Lagged Reserve Accounting and The Money Supply Process," Journal of Money, Credit and Banking, May 1976, pp. 167-180; Daniel E. Laufenberg, "Contemporaneous Versus Lagged Reserve Accounting," Journal of Money, Credit and Banking, May 1976, pp. 239-246; Robert D. Laurent, "Reserve Requirements: Are They Lagged in the Wrong Direction?" Journal of Money Credit and Banking, August 1979, pp. 301-310; and George G. Kaufman, "Report of the Ad Hoc Subcommittee on Reserve Proposals" (Memorandum, Federal Reserve Bank of Chicago, June 13, 1966). See also Milton Friedman, "Monetary Policy: Theory and Practice", Journal of Money, Credit and Banking, February 1982, pp. 98-118.

[8] These alternatives are discussed in Robert Laurent, "A Critique of the Federal Reserve's New Operating Procedure" (Staff Memorandum 81-4, Federal Reserve Bank of Chicago, 1981) and George G. Kaufman, Money, The Financial System and the Economy (3rd ed.) (Houghton-Mifflin, 1981), pp. 527-529.

[9] A complete discussion of the operating procedures is provided in Peter Sternlight, et. al., "Monetary Policy and Open Market Operations in 1980," Quarterly Review (Federal Reserve Bank of New York), Summer 1981, pp. 1-20.

[10] Board of Governors, pp. 4-5.

[11] Paul A. Volcker. "Statement Before the Subcommittee on Domestic Monetary Policy," House of Representatives, November 19, 1980.

[12] R. Alton Gilbert and David H. Resler, "Conduct of Monetary Policy Under Reserves Targeting" (Working Paper, Federal Reserve Bank of St. Louis, December 1980). The strategy is not greatly different from that used by the Fed in the 1920s and described in W. Randolph Burgess, The Reserve Banks and the Money Market (New York: Harper Brothers, 1927) and Winfield W. Riefler, Money Rates and Money Markets in the United States (New York: Harper Brothers, 1930). See also George G. Kaufman, "A Reexamination of the Significance and Role of Member Bank Borrowing from the Federal Reserve" (Working Paper, Federal Reserve Bank of Chicago, February 1965) and Allan H. Meltzer, "Consequences of the Federal Reserve's Re-attachment to Free Reserves" (Paper Prepared for Western Economic Association Meeting, July 1981).

[13] Peter D. Sternlight, "Is The Federal Reserve's Monetary Control Policy Misdirected?" Journal of Money, Credit, and Banking, February 1982, p. 126. See also David Lindsey and others, "Monetary Control Experience Under the New Operating Procedures" in Federal Reserve Staff Study, New Monetary Control Procedures, Vol. II, February 1981.

[14] Board of Governors, p. 3. The Fed's target level of borrowed reserves are not released publicly on a regular basis. They are not reported in the FOMC summary minutes. The 1980 targets were first published by the Federal Reserve Bank of New York in the summer 1981 of its Quarterly Review (see footnote 9). The 1981 targets have not yet been reported.

[15] Sternlight, p. 125.

[16] See, for example, Fred Levin and Paul Meek, "Implementing the New Operating Procedures: The View from the Trading Desk" in Federal Reserve Staff Study, New Monetary Control Procedures, Vol. I, (February 1981) and Fred Levin, "Further Work on Demand for Borrowing" (Federal Reserve Bank of New York, February 11, 1981).

[17] For a more complete description of the old system of equations see Raymond E. Lombra and Raymond G. Torto, "The Strategy of Monetary Policy" Economic Review (Federal Reserve Bank of Richmond), September-October 1975, pp. 3-14. A similar model specifying an additional reserve supply equation that is divided into borrowed and unborrowed components rather than a borrowing equation has been developed in Robert L. Hetzel, "The October 1979 Regime of Monetary Control and the Behavior of the Money Supply in 1980," Journal of Money, Credit, and Banking (May 1982), pp. 234-251.

[18] Paul A. Volcker, "Statement to Congress" Federal Reserve Bulletin (December 1979), pp. 959-960.

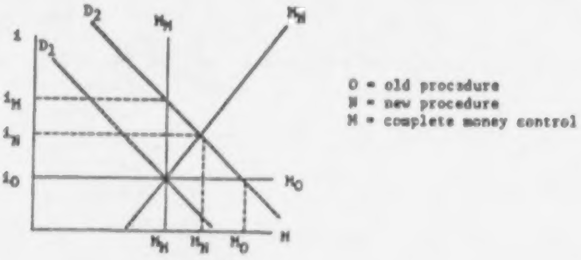
[19] "Record of Policy Actions of the Federal Open Market Committee," Federal Reserve Bulletin (December 1979), p. 974.

[20] Levin (February 11, 1981); Marvin Goodfriend, "Discount Window Borrowing, Monetary Policy and the Post-October 6, 1979 Federal Reserve Operating Procedure" (Working Paper, Federal Reserve Bank of Richmond, September 1981); and Paul Kasriel and Randall C. Merris, "Difficulties in Choosing an Initial Borrowing Target" (Federal Reserve Bank of Chicago, August 1981). Somewhat better results are obtained using more sophisticated estimation techniques by D.H. Resler, J.R. Barth, P.A.V.B. Swamy and W.D. Davis, "Detecting and Estimating Changing Economic Relationships: The case of

Discount Window Borrowings" Working Paper, 1981. Improved estimates may also be possible through more detailed modeling of the individual bank borrowing decision process. For example see Stephen Goldfeld and Edward Kane, "The Determinants of Member Bank Borrowing: An Econometric Study," Journal of Finance, September 1966.

[21] John P. Judd and Adrian W. Throop," Penalty Discount Rate: I," Weekly Letter (Federal Reserve Bank of San Francisco), October 30, 1981.

[22] In a recent paper David Lindsey argues that the borrowed reserve target is less inflexible in the short-run than the nonborrowed reserve target and that shifts in the demand for money function are automatically accommodated by changes in the same direction in borrowed reserves. Thus, "money and short-term interest rates have tended to move in the same direction (as) the data are essentially tracing out an upward sloping money supply function created by the nonborrowed reserves target operating procedure" (p. 9). If this were so, however, changes in money supply should be smaller for a given shift in demand under the new procedures than the old as may be seen from the figure below:



The greater weekly volatility in money under the new procedures suggests that the borrowed reserves target is less, not more, flexible than the nonborrowed reserves target so that the money supply function shifts frequently. David Lindsey, "Nonborrowed Reserve Targeting and Monetary Control" (Paper presented at Conference on Improving Monetary Control sponsored by the Federal Reserve Bank of St. Louis and Washington University of St. Louis, October 30, 1981).

[23] The same conclusion is reached by Gilbert and Resler.

[24] Although key in the determination of the unborrowed reserve target and in understanding policy, the initial borrowing assumption is not readily available. It is not published in either the summaries of FOMC meetings or the Annual Report of the Board of Governors. Its only published source is the annual review of open market operations in the Quarterly Review of the Federal Reserve Bank of New York.

[25] See also, Board of Governors of the Federal Reserve System, Annual Report 1980, pp. 87-125, and R. Alton Gilbert and Michael E. Trebing, "The FOMC in 1980: A Year of Reserve Targeting", Review (Federal Reserve Bank of St. Louis), August/September 1981, pp. 2-16.

[26] James L. Pierce, "The Myth of Congressional Supervision of Monetary Policy," Journal of Monetary Economics, November 1978, pp. 363-376. A recent attempt to correct the inter-FOMC meeting drift and compare targeted and actual growth rate in monetary aggregates appears in R. Alton Gilbert, "Conduct of Monetary Policy Under the Nonborrowed Reserves Operating Procedure," Paper Prepared for the Konstanz Seminar on Monetary Theory and Policy, June 8-11, 1982 (Federal Reserve Bank of St. Louis).

[27] Board of Governors of the Federal Reserve System, "Press Release," November 9, 1981, pp. 1-2.

[28] Lyle E. Gramley, "Statement Before the Subcommittee on Domestic Monetary Policy of the Committee on Banking, Finance and Urban Affairs, U.S. House of Representatives, March 3, 1982," Federal Reserve Bulletin, March 1982, p. 177.

[29] For previous examples of Fed self-fulfilling prophecies see George Kaufman, "The Federal Reserve's Inability to Control the Money Supply: A Self-Fulfilling Prophecy," Financial Analysts Journal, September/October, 1972.

[30] For example, Milton Freidman has written:

> In my opinion, the real problem is not that the Fed does not know how to produce stabler monetary growth, but that, despite lip service to that objective, the members of the Open Market Investment Committee of the Fed do not regard it as important to do so. Most are unreconstructed Keynesians or classical central bankers who regard control of "credit" or "credit market conditions" as far more important than steady monetary growth.

Milton Friedman "The Federal Reserve and Monetary Instability", Wall Street Journal, February 1, 1982, p. 16.

[31] I am indebted to Steve Strongin for suggesting this procedure.

Table 1

Percentage Change in Weekly Variability in Selected Interest Rates Pre-and Post-October 1979

	Pre-October 1979		Post-October 1979		
	70:1-79:41	75:53-79:41	79:41-81:48	79:41-81:48[*]	79:41-81:48[**]
	Standard Deviation				
Fed funds	3.719	1.903	6.130	5.257	5.309
3-month Treasury bill	3.371	2.387	5.323	4.543	4.577
5-year Treasury security	1.788	1.407	3.278	2.979	3.052
10-year Treasury security	1.328	1.027	2.683	2.552	2.619
20-year Treasury security	1.184	0.828	2.495	2.391	2.444

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[*] Omitted 3/15/80 - 1/1/81

[**] Omitted 3/15/80 - 1/31/81

Table 2

Percentage Change in Weekly Variability in Money Stock
Pre-and Post-October 1979

	Pre-October 1979		Post-October 1979		
	70:1- 79:41	75:53- 79:41	79:41- 81:48	79:41* -81:48	79:41** -81:48
			Standard Deviation		
M1B	1.288	1.539	1.729	1.771	1.741
M1B Less Currency	1.557	1.896	2.132	2.168	2.135

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[*] Omitted 3/15/80-1/1/81
[**] Omitted 3/15/80-1/31/81

Table 3

Comparison of Abbreviated Underlying System of Equations for Pre-and Post-October 1979 Operating Procedures

	Pre	Post
Basic Operating Relationship:	$M_T=f(FR_T)$	$M_T=f(B_T)$
Establish Target:	M_T	M_T
Solve for Consistent FR_T:	$TR=f(M_T, Y_P)$	$TR=f(M_T, Y_P)$
	$FR_T=f(TR)$	$FR=f(TR)$
Solve for Consistent B_T		$B_T=f(FR,DR)$

Key

M_T=Target Monetary Aggregate Growth

FR_T=Target Fed Funds Rate

TR=Treasury Bill Rate

B_T=Borrowed Reserve Target

DR=Discount Rate Complex

Y_P=Predicted Nominal GNP

T=Fed Target

p=Predicted Value

Table 4

Specifications from Directives of the Federal Open Market Committee, 1980

Date of meeting	Specified short-term annualized rates of growth for period mentioned (percent) M-1A	M-1B	M-2	Range for Federal funds rate (percent)	Initial assumption for borrowed reserves (millions of dollars)	Discount rate on day of meeting and subsequent changes (percent)	Notes
1/9/80........	December to March 4-5*		7*	11½-15½	1,000	12	The Committee's objectives were set in terms of M-1 and the old definitions of M-2 and M-3. In July 1979, the Committee had set growth of objectives for M-1, M-2, and M-3 from the fourth quarter of 1978 to the fourth quarter of 1979 of 3 to 6, 5 to 8, and 6 to 9 percent, respectively. (The M-1 objective incorporated later revisions in assumptions about the growth of NOW and ATS accounts.) The Committee anticipated growth in 1980 within those ranges.
2/5/80........	December to March 4½	5	6½	11½-15½	1,250	12 13 on 2/15 +3 percent surcharge on 3/17	FOMC indicated its objectives would be furthered by growth of M-1A, M-1B, M-2, and M-3 from the fourth quarter of 1979 to the fourth quarter of 1980 within ranges of 3½ to 6, 4 to 6½, 6 to 9, and 6½ to 9½ percent, respectively. The associated range for bank credit was 6 to 9 percent. On February 22, the upper limit of the range for Federal funds rate was raised to 16½ percent. On March 6, 1980 the upper limit of the range for Federal funds was raised to 17½ percent. The next day the Committee further modified the domestic policy directive to raise the upper limit of the range for Federal funds to 18 percent.
3/18/80.......	December to June 4½ (or somewhat slower)	5	7¾	13-20	2,750	13 + 3	
4/22/80.......	December to June 4½ (or somewhat slower)	5	6¾	13-19	1,375	13 + 3	On May 6 the lower limit of the range for Federal funds rate was reduced to 10½ percent. The 3 percent surcharge was removed effective May 7.

* Rates for M-1 and old definition for M-2.

Source: FRBNY Quarterly Review, Summer 1981, pp. 68-69.

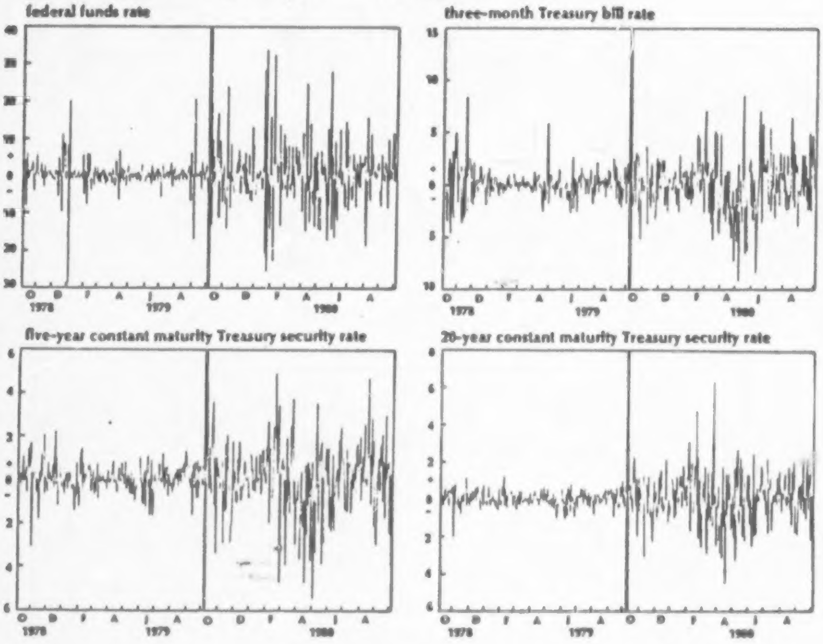
Table 4 (con't)

Specifications from Directives of the Federal Open Market Committee

Date of meeting	Specified short-term annualized rates of growth for period mentioned (percent)			Range for Federal funds rate (percent)	Initial assumption for borrowed reserves (millions of dollars)	Discount rate on day of meeting and subsequent changes (percent)	Notes
	M-1A	M-1B	M-2				
5/20/80.......	April to June						
	7-7½	7½-8	8	8½-14	100	13 12 on 5/30 11 on 6/13	
	(or moderately faster)						
7/9/80........	June to September						Objectives for 1980 remained the same. In addition, on July 29 the Committee agreed that, for the period from the fourth quarter of 1980 to the fourth quarter of 1981, it looked for a reduction of the ranges for growth of ½ percentage point from the ranges adopted for 1980, abstracting from institutional influences affecting the behavior of the aggregates.
	7	8	8	8½-14	75	11 10 on 7/28	
8/12/80.......	June to September						
	6½	9	12	8-14	75	10	
9/16/80.......	August to December						
	4	6½	8½	8-14	750	10 11 on 9/26	
10/21/80......	September to December						
	2½	5	7¼	9-15	1,300	11 12 + 2 on 11/17	
11/18/80......	September to December						On November 26 the Committee raised the upper limit of the range for the Federal funds rate to 18 percent. On December 5 the Committee modified the directive by providing leeway for pursuit of the Committee's short-run objectives for the behavior of reserve aggregates without operations being precisely constrained by the intermeeting range for the Federal funds rate for one week, and then extended it to the meeting on December 18-19, 1981.
	2½	5	7¾	13-17	1,500	12 + 2 13 + 3 on 12/5	
	(or somewhat less)						
12/19/80......	December to March						The objectives abstracted from the effects of deposit shifts connected with the introduction of NOW accounts on a nationwide basis. It was recognized that the introduction of NOW accounts nationwide at the beginning of 1981 could widen the discrepancy between growth of M-1A and M-1B.
	4½	4¾	7	15-20	1,500	13 + 3	
	(or somewhat less)						

Figure 1

Daily percentage changes in selected interest rates


federal funds rate

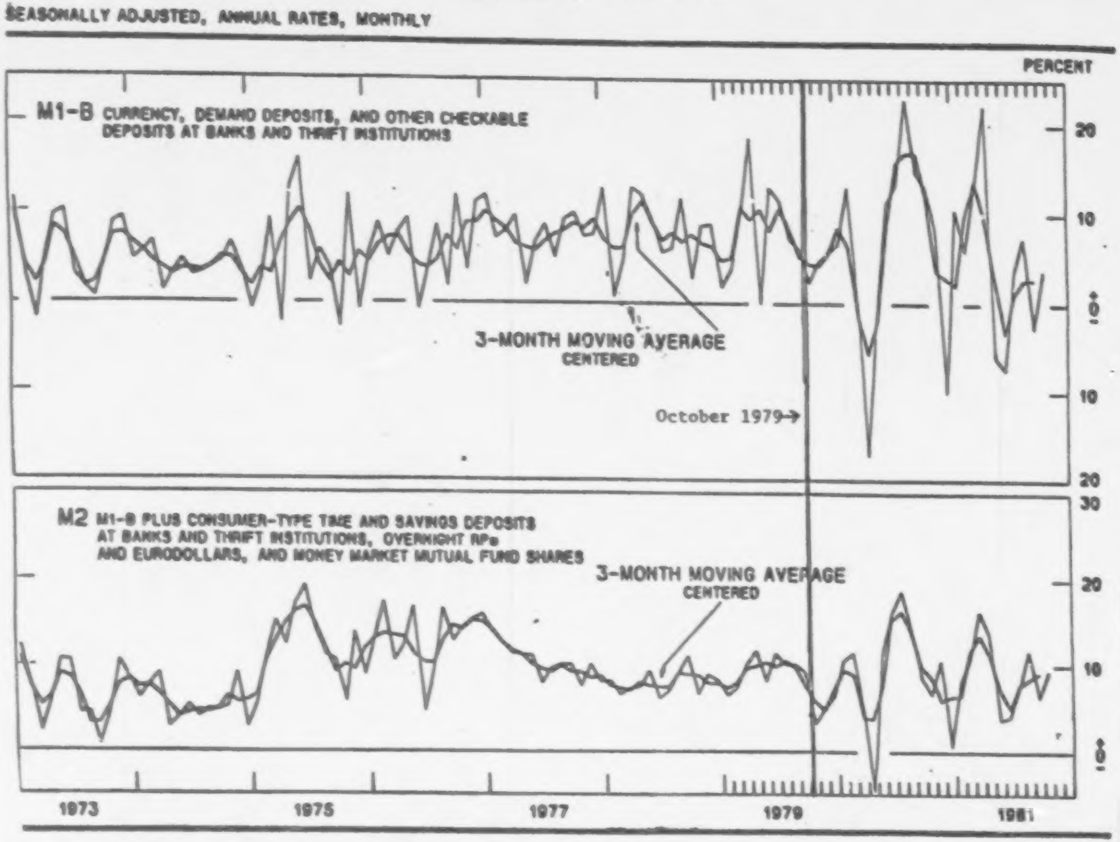
three-month Treasury bill rate

five-year constant maturity Treasury security rate

20-year constant maturity Treasury security rate

Source: Paul L. Kasriel "Interest Rate Volatility in 1980," Economic Perspectives (Federal Reserve Bank of Chicago), (January/February 1981), pp. 17.

Variability in M1B and M2



Source: Board of Governors of the Federal Reserve System, Federal Reserve Chart Book (February 1982), p.6.

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EDITORIAL NOTE

The papers which follow by Professor David Laidler and James Tobin and the comments on these papers by Professor R. C. O. Matthews and Professor James E. Meade were initially prepared for presentation at a Conference on 'Monetarism – An Appraisal' organised by the Royal Economic Society in London in July 1980.

MONETARISM: AN INTERPRETATION AND AN ASSESSMENT*

Like beauty, 'monetarism' tends to lie in the eye of the beholder, and before it can be assessed it must be defined. Though there have been several valuable attempts over the years to specify monetarism's key characteristics,[1] I shall not rely upon them in this essay. Each of them has been heavily conditioned by its time and place of writing, and monetarism has evolved over the years in response to changing circumstances, and in different ways in different places, as new hypotheses have either been developed or absorbed. Thus, I will begin this paper with my own characterisation of monetarism. In my view, the key characteristics of monetarism are as follows:

(I) A 'quantity theory' approach to macroeconomic analysis in two distinct senses: (*a*) that used by Milton Friedman (1956) to describe a theory of the demand for money, and (*b*) the more traditional sense of a view that fluctuations in the quantity of money are the dominant cause of fluctuations in money income.

(II) The analysis of the division of money income fluctuations between the price level and real income in terms of an expectations augmented Phillips curve whose structure rules out an economically significant long-run inverse trade off between the variables.

(III) A monetary approach to balance-of-payments and exchange-rate theory.

(IV) (*a*) Antipathy to activist stabilisation policy, either monetary or fiscal, and to wage and price controls, and (*b*) support for long-run monetary policy 'rules' or at least prestated 'targets', cast in terms of the behaviour of some monetary aggregate rather than of the level of interest rates.

(I) Categorises the theoretical core of monetarism as it developed in the 1950s and 60s, (II) and (III) represent theory developed or absorbed by

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* I have benefited greatly from the extensive comments of John Foster, Milton Friedman, John Helliwell, Geoffrey Kingston, Clark Leith, Thomas Mayer, Ronald Shearer and George Zis, none of whom is to be held responsible for the views that I espouse. The financial support of the Social Science and Humanities Research Council of Canada is gratefully acknowledged.

[1] See, for example, James Boughton (1977), Karl Brunner (1970), Nicholas Kaldor (1971), Harry Johnson (1972), Franco Modigliani (1977), Thomas Mayer (1978), Douglas Purvis (1980). This list is far from exhaustive.

monetarists since the mid-1960s, while (IV) summarises a view of macroeconomic policy issues which, even though it is neither logically implicit in their positive analysis, nor their exclusive property, has remained reasonably constant among monetarists for the last quarter century.

Before discussing these characteristics of monetarism in detail let me deal briefly with two propositions that some might feel should be included in the above list. First, on the one hand monetarists have frequently been accused of failing to give any account of the transmission mechanism of monetary policy, and have had attributed to them a belief in some mysterious 'direct' influence of money on expenditure; on the other hand they have themselves sometimes referred to a characteristically 'monetarist model' of that same transmission mechanism cast in terms of portfolio substitution among a wide variety of assets including reproducible capital, and even perhaps non-durable consumption goods. I believe that this is and always has been a non-issue. The claim that monetarists have failed to specify their transmission mechanism has been untrue from the very outset (see, for example, Brunner (1961), Friedman and David Meiselman (1963), Friedman and Anna Schwartz (1963*b*)), and although the mechanism propounded in those papers is a good deal more sophisticated and better grounded in relative price theory than that embodied in the textbook macro-economic models of the 1950s, or in the econometric models of that vintage, there is no essential difference between it and that analysed for example by James Tobin and his associates.[1]

Second, monetarists are often said to prefer 'small' to 'big' econometric models, and their views about the importance of the quantity of money for the determination of the general price level have undoubtedly led them to take highly aggregated systems seriously. Moreover, early large-scale econometric models were not constructed so as to highlight any strong effects of money on economic activity. Monetarists criticised them, as much for being Keynesian, as for being 'big'. Even so, subsequent developments have clearly shown that 'big' models can easily take on some very monetarist characteristics, while the Albert Ando and Franco Modigliani (1965) and Michael De Prano and Mayer (1965) papers demonstrate that single equation reduced form techniques can as well produce 'Keynesian' as 'monetarist' results.[2] Empirical analysis of all sorts has been used by both sides in the monetarist controversy, and if there is a method of empirical research more frequently associated with monetarist work than Keynesian, it is not small model or single equation econometrics, but National Bureau techniques of business cycle analysis.[3] Thus though empirical techniques have in specific instances, provided something to argue about, there seems to me to be no clear dividing line between the statistical methodology of monetarists and their opponents about which one can usefully generalise.

[1] This is the judgment of Johnson (1962) and Brunner (1970), among others.

[2] Consider, for example, the London Business School model of the U.K. economy (see Jim Ball and Terry Burns (1976)). The Canadian RDX2 model also seems to me to fall into this category.

[3] See, for example, Friedman and Schwartz (1963*a*), Philip Cagan (1979). Note that such monetarists as Brunner and Meltzer, however, do not use National Bureau techniques. They are mainly associated with the Chicago branch of monetarism.

I. THE QUANTITY THEORY OF MONEY

It has often been said that Friedman's celebrated essay on the Quantity Theory could just as well have been called 'The Theory of Liquidity Preference – a Restatement'. Harry Johnson (1962) argued that Friedman's work on the demand for money should be viewed as a development of a fundamentally Keynesian capital theoretic approach to monetary theory and Don Patinkin (1969) later documented that it was indeed just that. However, I would stress the word *development* here, for 'Keynesian' though Friedman's model is, it is no more *Keynes'* model than Keynes' 'Marshallian' theory of income determination is Marshall's theory; and it differed from other developments of Keynes' theory of liquidity preference that appeared at about the same time in a number of ways.

First it abstracted from any specific characteristics that money might have because it is a financial asset; Friedman treated money instead 'as if' a service-yielding consumer durable to which the permanent income hypothesis of consumption could be applied, just as Margaret Reid (1962) applied it to housing, or the contributors to Arnold Harberger (1960) did to a variety of other durable goods. In this respect Friedman's approach stands in sharp contrast to the analyses of William Baumol (1952) and Tobin (1956) (1958) as it does in its claim to be a theory of the total demand for money in the macro-economy rather than of some component of that demand. Second, Friedman explicitly recognised inflation as an own rate of return on money and postulated a well determined functional relationship between the expected inflation rate and the demand for money, a relationship whose existence Maynard Keynes (and some of his disciples) explicitly denied. (See Roy Harrod (1971).)

Finally, and so obviously that the matter is usually overlooked, Friedman asserted that the demand for money was, *as an empirical matter*, a stable function of a few measurable arguments. Keynes did not believe that – his empirically stable relationship was the consumption function – and nor did (or perhaps do) many of his British followers.[1] Moreover, pre-Keynesian monetary theorists did not believe in an empirically stable demand for money function either. Though they often enough assumed a constant velocity of circulation that is by no means the same thing, and in any event, they typically did so in order to make their analytic points with the maximum of clarity, and not with the intention of stating a belief about the nature of the real world. It is only with the publication of Friedman's essay that statements to the effect that the velocity of circulation is, *as a practical matter*, a stable function of a few arguments become central to debates about monetary economics. Its stress on this hypothesis makes monetarism a very different doctrine from Classical and Neoclassical economics, no matter what other similarities there may be, though it should be noted explicitly that the econometricians among American Keynesians have not found it necessary to adopt a monetarist label as a result of contemplating the possibility of the empirical stability of the relationship.[1]

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[1] The Radcliffe Report (1959) is based on the proposition that the demand for money function is essentially nonexistent as a stable relationship. For a later statement of the same point of view see Kaldor (1971), or Joan Robinson (1970).

Ten years ago it was possible to argue that this characteristic monetarist belief in a stable demand for money function was well supported by empirical evidence as I did in Laidler (1971). However, the last decade has produced a good deal of evidence to suggest that the relationship has shifted in an unpredicted way in a number of countries. There is not space to go into details here, but I would be willing to defend the following assertions.[2]

First the instability in question is often presented, particularly in the United States, as a matter of a cumulative deterioration in the ability of the function to track data. This cumulative deterioration is largely an illusion stemming from the use of dynamic simulations of relationships containing a lagged dependent variable. A *one-time shift* of such a function will, as a matter of arithmetic, lead to a *cumulative deterioration* of its dynamic simulation goodness of fit that should not be read as implying a *continuous* tendency of the relationship to shift. On the other hand, I do not believe we can safely conclude that such one-time shifts in the demand for money function have not occurred, despite the fact, again particularly in the United States, that some formulations of the relationship turn out to deteriorate significantly less than others during the 1970s. When important issues like the stability of the demand for money function begin to depend, for example, on just which interest rate or rates one uses to proxy the opportunity cost of holding money, I believe that the correct conclusion is not that the variable which provides the best fit this time around is the 'right' one, but that our knowledge of the details of the relationship is more fragile than we thought. Finally, arguments to the effect that the demand for money function has not 'really' shifted, that we can restore its stability by taking note of institutional change and redefining 'money' so as to take account of its effects, need to be handled carefully. They are relevant to the interpretation of economic history, but the successful conduct of policy requires that specific actions be taken *vis à vis* precisely defined aggregates in order to achieve particular policy goals. To say, after the event, that our policy did not work because new assets evolved whose existence affected the outcome of our policies in a way that we could have forecast had we only been able to foresee their invention, may be true, but it is not very helpful in enabling us to do better next time, unless the evolution in question was, as it sometimes can be, the predictable outcome of some policy action or other.

Shifts in the demand measured for money function are not a new phenomenon. Evidence drawn from more than one country shows that the demand for money function shifted as the institutional framework evolved long before 1974. To cite but four examples: the income elasticities of demand for money seem to have fallen significantly in both the United States and Britain in the

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[1] Note in particular that the Keynesian James Tobin was the author of a pioneering econometric study of the demand for money function. See Tobin (1947). See also his review of Friedman and Schwartz (1963*a*), Tobin (1965), where further econometric estimates of the demand for money function are presented.

[2] I have dealt with the matters taken up here in much greater length in Laidler (1980).

20th century (see Laidler, 1971), the abolition of interest payments on demand deposits in the United States in 1933 was associated with a change in the nature of the demand function for narrow money (see Charles Lieberman, 1980), as was the growth of Savings and Loan Associations in the 1940s (see Cagan and Schwartz, 1975), or in Britain, the introduction of 'Competition and Credit Control' in 1971. Such shifts in the demand for money function are not new, then, but they are important. Though two of the above examples were the result of policy changes and might have been predicted *ex ante*, two were not. In any event these effects of institutional change on the demand for money function have important implications for our views on the proper conduct of monetary policy, as I shall argue in Section IV below.

In the traditional vocabulary of economics, the phrase 'quantity theory of money' referred to a theory of (or better an approach to the analysis of) the relationship between the supply of money and the general price level. The characteristic monetarist belief that variations in the supply of money are the 'dominant impulse' (to borrow Brunner's phrase) causing fluctuations in money income is clearly related to this traditional version of the quantity theory, but modern monetarists are more clearcut in their attribution of a dominant causative role to the money supply than were quantity theorists of earlier vintages.[1] The difference here is surely attributable to monetarists' belief in a stable demand for money function, because earlier quantity theorists spent much of their time contemplating the empirical possibility of autonomous shifts in velocity. However, it takes more than a belief in a stable demand for money function to yield the monetarist view of these matters.

Setting aside the important complications that arise in the open economy, there are two ways in which a conventional analytic model of the IS-LM variety can be made to produce 'monetarist' results. First in its under-employment form, if, relative to expenditure, the demand for money is insensitive to interest rates then the quantity of money comes to dominate the determination of the level of real income. Now obviously a monetarist must deny that the interest elasticity of demand for money is infinite, and this has been done often and explicitly, but it is mainly in Britain that such a denial has been thought to amount to a distinctively monetarist statement. A number of textbook writers (including myself) have gone to the other extreme and used the assumption of a zero interest elasticity of demand for money to generate monetarist propositions from an under-employment IS-LM model. However, Friedman's (1959) study of the United States function is a notable exception to the general tendency of demand for money studies – including those of such monetarists as Brunner and Meltzer (e.g. (1963)) – to find a significant interest elasticity of demand for money, and his inability to find a relationship turned out to be the result of faulty statistical method (see Laidler, 1966, and Friedman, 1966). Thus, the existence or non-existence of a statistically significant interest elasticity of demand for money has not been a serious issue between monetarists and their opponents for at least fifteen years. If it had been, it is hard to see how monetarists, not least Friedman could have contributed to the analysis of the welfare costs of inflation, or how Friedman and Meiselman could have accepted their own evidence of the importance of autonomous expenditure as an influence on money income during the depression years with such equanimity.[1]

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[1] But as with all such blanket judgments as this there are important exceptions. Irving Fisher's empirical work on the relationship between money and prices presented in *The Purchasing Power of Money* (1911) is not so far removed from modern monetarism.

If we rule out the vertical LM curve, we can still get an IS-LM model to produce monetarist results if we assume full employment, and then postulate that the major source of disturbance is variations in the level – or rate of change of – the nominal money supply. With the determinants of velocity, except the expected rate of inflation, thus pinned down at full employment, and with fluctuations in money income thus reduced to fluctuations in the price level, the characteristics of the demand for money function – other than its stability and homogeneity in the general price level and its sensitivity to fluctuations in the expected inflation rate – become quite irrelevant to the relationship between the quantity of money and money income. A Keynesian of course would agree, as an analytic matter, with this proposition, but would probably deny what the monetarist would claim: namely that, if the IS-LM model is to be used as a framework for discussion at all – and there are some monetarists, notably Brunner and Meltzer, who would not want to use it at any price – then this full employment version of it is frequently the empirically relevant one.

To put matters this way is, in effect, to say that monetarists' belief in the quantity theory as a theory of money income boils down to the view that sustained inflation is caused by an expanding money supply. This is not too far from the mark, and much of the spread of monetarism in the last fifteen years stems from its ability to provide a readily comprehensible explanation of inflation along these lines. However, to cast the monetarist approach to the analysis of inflation in terms of a 'full employment' IS-LM model is difficult to justify except as a very first approximation. Though monetarists are among those who have written at considerable length about the interaction of the quantity of money and the price level in models where 'full employment' is the rule, the models in question have been long-run equilibrium growth models, not versions of short-run IS-LM analysis; in any event the 'money and growth' literature and, to a lesser extent, that dealing with 'money and welfare', even though it builds on Friedman's formulation of the relationship between the demand for real balances and the expected rate of inflation as a well defined inverse function, is properly viewed, not as an offshoot of monetarism, but as an extension of Patinkin's (1956) theoretical analysis of the classical dichotomy and the neutrality of money to deal with the *long-run* properties of a *growing* economy, in the presence of variations in the *rate of change* of the nominal money supply.[1] In dealing with the interaction of the quantity of money, money income, and prices, the essential monetarist contribution has been to postulate the existence of stable relationships among these variables as an *empirical* matter, and to draw *practical* conclusions about the proper conduct of *short-run* stabilisation policy from studying their nature, and the 'money, growth and welfare' literature has next to nothing to say about these matters.

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[1] But this of course is not to say that Friedman has always paid as much attention to the interest elasticity of the demand for money as his critics might have wished. See for example the various reviews of the monetary history of the United States, but note that the monetarist Allan Meltzer (1965) was as critical on this score as any other reviewer. What we are here dealing with is a characteristic of some of the work of one, albeit the most important, monetarist rather than of monetarism in general.

When it comes to empirical propositions about the relationship between money and money income, what was once monetarist heresy is now close to being received orthodoxy. In this respect monetarism has made an important positive contribution to macroeconomics. In the United States it seems now to be widely accepted that the correlation between the quantity of money and money income that long runs of time series data display is not just the result of coincidence, but does in fact constitute evidence for the existence of a causative relationship that has run primarily from money to money income rather than vice versa. The weight of the evidence produced by Friedman and his various collaborators (not to mention predecessors) and the persuasiveness of their arguments, has changed enough minds to warrant the conclusion that, in an important sense, 'we are all monetarists' now. Elsewhere in the world, not least in Britain, there has been a similar movement of opinion. Certainly one no longer hears much about velocity being variable 'almost without limit'. However, one does hear more about 'reverse causation' in Britain as an explanation of the correlation between money and money income than one does in the United States (I shall take this matter up below).

Even so, monetarist doctrine asserts not just that variations in the quantity of money lead to systematic variations in money income, but also, that those variations are primarily in prices rather than real income. Although, as I have already noted, much of monetarism's popular appeal stems from its claim to provide an easily comprehensible theory of inflation, that theory of inflation is by no means universally accepted. The view that the influence of money on money income falls on its real income component and not on prices has constituted a 'Keynesian' alternative to the monetarist position on these matters and the 'expectations augmented Phillips Curve' has provided a focus for debate about them.[2] That is why a particular set of beliefs about its nature is a vital ingredient of monetarist doctrine.

II. THE EXPECTATIONS AUGMENTED PHILLIPS CURVE

The notion of a trade off between inflation and unemployment was widely prevalent in Keynesian literature even before Arthur Brown (1955), William Phillips (1958) and Richard Lipsey (1960) formalised it in terms of what seemed to be an empirically stable functional relationship. Monetarists have long doubted its existence, instead asserting a belief in the 'inherent stability' of the private sector in the absence of policy induced monetary disturbances, by which they have usually meant nothing more complex than that the system tends in and of itself to operate at or near 'full employment', regardless of the inflation rate, if policy makers do not upset matters. The papers of Edmund Phelps (1967) and Friedman (1968) provided a framework in terms of which differences of opinion about these matters could be stated sharply enough to be confronted with empirical evidence. Although some commentators (e.g. Helmut Frisch, 1978) treat the Phillips curve as providing an alternative theory of inflation to the monetarist approach, this is surely a mistake. In its expectations augmented form, it emerged at the turn of the decade to provide what Friedman (1970) called 'the missing equation' in the monetarist model of inflation.

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[1] Mayer (1978) argues, correctly I believe, that Patinkin should not be regarded as a monetarist. This of course is not to deny the important influence that Patinkin's work had on subsequent monetary analysis. See, for example, Jonson (1976*b*).

[2] There seems to have been a systematic shift in British opinion from the Radcliffe view that money does not matter at all, to the view that money matters for real income but not for prices. To trace this development is beyond the scope of this paper. However, the work of Richard Kahn shows clearly that it has taken place. Compare his evidence to the Radcliffe Committee with, for example, Kahn (1976).

It is possible to derive this 'missing equation' from two very different theoretical bases, and disagreements here are of quite fundamental importance for macroeconomics, but the first round in the debate about the expectations augmented Phillips curve, and the one that was crucially relevant to monetarism, paid little attention to these matters. It was almost entirely empirical because the relationship in question enabled alternative viewpoints about important and pressing policy issues to be formulated and investigated in an easily manageable way. With Δp the inflation rate, Δp^e the expected inflation rate, and y some measure, either direct or indirect, of the deviation of output from its 'full employment' level, and v a 'catchall' vector of other influences, systematic as well as random, the general form of the relationship may be written as follows:

$$\Delta p = gy + b\Delta p^e + v. \tag{1}$$

A whole spectrum of beliefs about the nature of inflation may be expressed in terms of this simple equation, depending upon the values assigned to its parameters. Thus, the extreme 'sociological' view of the determination of the price level, that was widely prevalent in Britain in the early 1970s, would predict that the parameters g and b were essentially equal to zero, implying that monetary policies, if they had any effect on money income, would influence real income alone.[1] The behaviour of prices, in this view, was determined by exogenous factors that would all go into the catchall vector v. At the other extreme, the typical monetarist of the early 1970s would argue that g was positive, so that inflation would, relative to expectations, be low in a depressed economy, and high in an over-expanded one. He would also argue that the coefficient b on expected inflation would be equal to unity, and would supplement equation (1) with some formula for the formation of expectations, typically based on the error learning hypothesis, that ensured that, eventually, any constant actual inflation rate would come to be fully anticipated. For him, therefore, any trade off between inflation and deviations of output from full employment was a temporary one which vanished in the long run. The typical 'American Keynesian' of the same vintage would agree with the monetarist about the parameter g, and about the reasonableness of assuming that expectations would eventually catch up with experience, but would assign a value of less than unity to the parameter b, thus ensuring that though the price in terms of inflation of increasing output was higher in the long run than in the short run, it did not, as the monetarist asserted, ever become infinitely high.[1] He might also argue that equation (1) omitted to mention explicitly many factors that in particular times and places might have an important influence on the inflation rate, and which it will suffice here to think of as being captured in v.

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[1] See Peter Wiles (1973) for a particularly extreme version of the sociological approach to inflation.

There is not space here to survey the extensive empirical literature that these issues generated, but its upshot may be summarised easily enough. The evidence that, other things equal, inflation varies with the level of aggregate demand is overwhelming. To the extent that differences of opinion here ever set monetarism apart from other points of view – and I think they probably did in Britain, though not in North America – then surely we have here another case of 'we are all monetarists now'.[2] There has also been a swing towards the typically monetarist belief that in the long run there is no economically significant inflation–output trade off. The more rapid inflation of the 1970s and the more sophisticated methods of modelling expectations developed over the same period have provided empirical evidence of a type that we did not have a decade ago to support this belief. There is still substantial disagreement though on the question of how fast the economy converges on the long-run solution. Finally there is more of a consensus about the importance of the influence of 'other' factors on the inflation rate than there was. Monetarists are willing to agree that factors such as the activities of OPEC, unexpected real shocks, or sudden changes in the level of indirect taxes, can affect the behaviour of the price level 'temporarily' against the background of long-run trends determined by monetary factors; Keynesians, particularly American ones, in their turn are now willing to agree that the long-run trend of inflation may well be determined by monetary factors while continuing to stress the importance of special factors for the short run. However, as we shall now see, there is much less of a consensus about the theoretical basis of the Phillips curve than there is about its empirical properties.

As originally analysed by Lipsey, the Phillips curve dealt with the reaction of the money wage to the existence of a general condition of excess demand for labour in the economy, and therefore of the general price level to the excess demand for goods. Excess demand was conceived of, not as a purely *ex ante* notion such as we meet in theoretical analyses of Walrasian tâtonnement, but as a realised quantity such as appears in models of economies made up of markets characterised by sticky prices. In their original critiques of the Phillips curve. Friedman (1968) and Phelps (1967) both concentrated on the point that disequilibrium in the labour market might be expected to bring pressure to bear on real wages rather than on money wages *per se*, and that what would happen to the latter would therefore be critically influenced by what was thought to be happening to the general price level. Each of them, though Phelps more explicitly so than Friedman, treated unemployment as a quantity signal that conveyed to economic agents the desirability of varying prices, and hence seemed to be providing a crucial correction to what remained a fundamentally Keynesian approach to the analysis of wage and price stickiness.[1]

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[1] I have in mind here, in particular, the work of Robert Solow (1969) and James Tobin (1972).

[2] See Anthony Santomero and John Seater (1979) for a recent and well-balanced survey of the evidence on these matters.

On the other hand, most of the contributors to the well-known Phelps (1969) volume started from a very different theoretical basis to provide an explanation of the interaction of output and prices, though the similarity of their conclusions to those stated by Phelps and Friedman at first distracted attention from what in retrospect was the much more important theoretical matter of different premises.[2] According to this alternative approach, which was anticipated by Irving Fisher (1911), the expectations augmented Phillips curve is in fact an aggregate supply curve. Equation (1) is derived from

$$y = (1/g)\,(p-p^e) \tag{2}$$

combined with the following definition of the expected rate of inflation

$$\Delta p^e \equiv p^e - p_{-1}. \tag{3}$$

Brunner and Meltzer were quick to adopt this interpretation of the expectations augmented Phillips curve. They had already developed a view of the transmission of monetary impulses in asset markets that stressed the role of relative prices as signalling devices, and found it easy enough to extend that line of reasoning to the markets for output and labour services as well (see Meltzer, 1969).[3] By now there can be no doubt that this aggregate supply curve interpretation of inflation employment interaction is the dominant one among monetarists. However, not all monetarists have accepted it (see, for example, Cagan, 1979), and as I shall now argue, it raises issues that go well beyond the traditional subject matter of the monetarist debate.

To say that the Phillips curve is an aggregate supply curve is to say that fluctuations in output and employment in response to price level variations represent the voluntary choices of individuals operating in markets which are continually clearing. Since voluntary choices made on the basis of erroneous expectations are by no means the same thing as choices that lead to the outcome which agents would have desired, this is not to deny that deviations of output and unemployment from the 'natural' levels they would attain if expectations were fulfilled represent a serious problem.[4] However, it is to locate the cause of unemployment, not in the failure of markets to bring together all willing buyers and sellers in *ex ante* mutually satisfactory trades, but rather in a failure of markets (and other social institutions as well perhaps) to convey sufficient information to enable the expectations upon which those trades are based to be formed accurately in an economy subjected to stochastic shocks.

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[1] Notice that in some of his subsequent writings on inflation-unemployment interaction Friedman adopts an aggregate supply curve interpretation of the Phillips curve. See, for example, Friedman (1975).

[2] See the papers by Armen Alchian, Robert E. Lucas and Leonard Rapping, Donald Gordon and Alan Hynes, and Dale Mortensen, all in the Phelps (1969) volume.

[3] In later work carried out by Brunner and Meltzer and their associates, a version of the aggregate supply curve in which the rate of change of output rather than the level of output affects the rate of inflation appears. This form of the relationship appears to stem from their tendency to treat the expected inflation rate as synonymous with the rate of change of the expected price level. See Brunner and Meltzer (eds.) (1978) and particularly the comments there by Bennett McCallum.

[4] Thus, though I agree with much of what Willem Buiter (1980) has to say about this theory of employment, I cannot accept his characterisation of it as 'The Macroeconomics of Dr. Pangloss'. It might be noted that in the aggregate supply curve interpretation of the Phillips curve, the natural unemployment rate becomes a long-run equilibrium concept. In the price reaction function interpretation of the relationship it seems to me to be synonymous with the Keynesian concept of the minimum feasible unemployment rate. For a perceptive discussion of some of the issues involved here see Thomas Wilson (1976).

If fluctuations in output and employment about their natural rates are the result of the failure of expectations to be realised, the manner in which expectations are formed must play a vital role in their analysis. That is why the "rational expectations" hypothesis is a natural supplement to the aggregate supply curve interpretation of the Phillips curve. If agents suffer losses in utility as a result of making expectational errors, they have an incentive to use all available information in forming their expectations up to the point at which the marginal benefit from improving their accuracy equals the marginal cost of doing so. The rational expectations hypothesis does *not* say that every agent's expectations are always as accurate (i.e. have as small a variance) as they would be if he were equipped with a 'true' econometric model of the economy in which he operates (though it is sometimes convenient to formulate it that way in analytic and empirical exercises), but it does say that his expectations will not be wrong *systematically* over time and to that extent will resemble those generated by such a 'true' model in being unbiased and serially uncorrelated. An agent who forms expectations in a manner that leads to systematic error will find himself persistently making the wrong choices; hence in the very course of his market activities, he will be provided *gratis* with the information necessary to eliminate that systematic error.

If each individual makes only random errors in forming expectations, two questions naturally arise: how does it happen that at a particular moment the expectations of a predominant number of agents in the economy should be in error in one particular direction so that aggregate output and employment come to deviate from their 'natural rates', and how does it happen that the fluctuations in output and employment which are observed in any actual economy come to display that pattern of serial correlation summarised in the term 'business cycle'? The answer to the first question given by Lucas (1972) is by now well known. If individuals have more up-to-date information about the money prices that rule in the markets in which they operate as sellers than about others, then in order to assess the pattern of relative prices upon which their quantity decisions rest, they must form expectations about the behaviour of other money prices. An unforeseen shock affecting the whole economy which leads to a change in the general price level will influence individual money prices, and will have its consequences everywhere misread as reflecting relative price changes. Hence quantities supplied will everywhere change.

If that was all there was to it, output and employment fluctuations would be random over time. However, if there are time delays in getting information to agents, if there are costs of adjusting output decisions once taken, or if some of the goods over-produced in error in the face of a positive unexpected shock to the price level are durable, then the effects of that shock will persist over time.[1] By the time its effects on output have petered out there will be too many durable goods in the economy – capital will be 'too deep' – and the marginal productivity of labour in terms of consumption in industries producing durable goods will fall. If workers prefer to take extra leisure when their marginal productivity is low, and if the price system operates so as to inform them of when that is the case, there will be a voluntary fall in the level of employment that will persist until the structure of the economy's capital stock is restored. The objection to this explanation of the cycle, that it predicts more wage variability than we observe in the real world, can be countered by arguments to the effect that firms and households find it mutually beneficial to enter into wage contracts under which wages do not instantaneously fluctuate in tune with the marginal productivity of labour, but under which firms are permitted to lay off workers in such a way that the latter still take more leisure at times when their marginal productivity is unusually low, even though the behaviour of wages no longer signals the fact.

Readers will find the last paragraph reminiscent of the Austrian business cycle theory of the 1920s and 1930s, and that is no accident. It is the Austrians, and not, as Solow (1980) has suggested, Pigou, who are the predecessors of Lucas, Sargent and their associates. Like Ludwig von Mises and Friedrich von Hayek, they have set themselves the task of producing a theory of the business cycle that is firmly based on the notion that all market phenomena represent the harmonious outcome of the voluntary choices of maximising individuals. However these neo-Austrians have gone beyond their predecessors to produce a theory in which output and employment as well as prices fluctuate as a result of such voluntary choices. Whatever we may think of the empirical relevance of that theory, and its proponents show an admirable, and un-Austrian, willingness to submit their ideas to empirical tests,[2] we must surely agree that its very construction represents an intellectual achievement of the highest order.

One can admire a theory without agreeing with it, and there are many including myself who would challenge the basic assumption upon which the analysis just discussed is based, namely that it is legitimate to model the economy 'as if' markets always clear. It is one thing to agree that commodity and asset markets dominated by specialist traders ought, and indeed do, display the characteristics associated with continuous clearing and rational expectations, and quite another to attribute similar characteristics to the markets for many components of final output, and above all to the labour market. One may follow Hicks (1974) in distinguishing between 'flexprice' and 'fixprice' markets, assign the labour market to the latter category, and argue that the interaction of inflation and unemployment is best analysed on the premise that the Phillips curve represents the disequilibrium response of prices to a mismatching of supply and demand.

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[1] I base the following arguments on the papers of Lucas (1975), Thomas Sargent (1976) and Lucas (1977). The first two of these papers are extremely technical and I am by no means sure that I am doing justice to them in the discussion that follows. Milton Friedman has pointed out to me that one can only say that errors are random or systematic if one is also specific about both the *time at* which expectations are formed, and the *period for* which they are formed. If one is now planning for, say a five-year horizon, then the rational expectations hypothesis permits the actual value of any variable to deviate systematically from its *ex ante* expected value over any interval of less than five years. This matter is clearly related to questions raised by adjustment lags, the durability of certain goods, and so on, since the horizon over which a decision taken now is likely to be binding is also presumably the horizon over which a rational agent would seek to form expectations about relevant variables. To the best of my knowledge, the published literature has not recognised this point explicitly, and it deserves much more attention than I have space to give it here.

[2] To comment on the empirical work in question, notably that of Robert J. Barro (1978), would take us beyond the scope of this essay.

Of course the 'neo-Austrians' are well aware that there is no Walrasian auctioneer to set prices, and no recontracting to ensure that trade only takes place at market clearing prices; but they do assert that individual agents – or their representatives – are acute enough in their bargaining to ensure that money wages and prices universally behave 'as if' markets operated along such Walrasian lines, that they perceive the possibility of realising mutual gains by adjusting wages downward when excess supply turns up in the market in which they are operating, and act upon that perception.[1] However one can have no difficulty accepting the proposition that, even in labour markets, if it is mutually beneficial to lower money wages (or their rate of change), agents will discover this and will agree to do so, but still find it hard to understand how the relevant information is conveyed to the agents in question without the intervention of quantity signals. In a Walrasian market, the auctioneer can discover that the price is too high by adding up notional supplies and finding out that they exceed notional demands, to use Robert Clower's (1965) terms, but how can participants in any actual labour market find out that money wages there are too high without some of them discovering first that they are unable to sell all the services that they would like at the going rate?

If adjustments in the level (or rate of change) of money wages and prices to aggregate demand shocks are anything other than instantaneous, then markets fail to clear, trade takes place at false prices, and quantity signals, perhaps amplified by multiplier effects, become an integral part of the mechanism whereby monetary changes are transmitted to the behaviour of the price level. This line of analysis is as 'Keynesian' in spirit as the clearing market approach is 'Austrian', and its existence permits one to subscribe to the expectations augmented Phillips curve without also being committed to a clearing market rational expectations approach to the analysis of economic fluctuations. Moreover, the approach in question does *not* differ from the clearing market view in denying that individuals perceive and then engage in all available mutually beneficial trades. It simply denies that they do so infinitely rapidly. I do not see why, as for example Barro (1979) has recently suggested, to postulate an infinite speed of price adjustment in the face of excess demand or supply is to conform to sound microeconomic principles, and to postulate anything significantly slower is to propose an '*ad hoc* non-theory'.

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[1] Robert J. Barro (1979) presents a particularly forceful and clearcut statement of what I am calling the 'neo-Austrian' view on these matters. Robert Solow (1979) might be regarded as providing a traditional Keynesian rebuttal of this line of argument. Note that questions of the relevant time horizon, raised in footnote 1, p. 12, are again relevant here.

The non-clearing market approach to analysing inflation employment interaction is not obviously incompatible with the notion of rational expectations. If output fluctuations convey information about the appropriate behaviour concerning price setting as this approach suggests, they can be regarded as constituting one of the ingredients of the expectations upon which such behaviour is based. In that case the term Δp^e in equation (1) can be thought of as summarising influences upon expectations *other than quantity signals*.[1] To say this begs the question of what those 'other influences' on expectations might be, but leaves open the possibility that the same type of information to which the rational expectations hypothesis draws our attention could be incorporated without difficulty into models based on the non-clearing market approach. Observations on the past behaviour of the money supply, for example, might well provide agents with information about the appropriate way to set prices, and might be included among those 'other' influences, as might, in an open economy, variations in prices ruling elsewhere in the world economy, variations in exchange rates, and so on.[2]

The non clearing-market interpretation of the Phillips curve needs to be reconciled with the basic facts of the business cycle. Once given, why do output signals not result in an immediate adjustment of prices to a market clearing level? The answer here is straightforward – a quantity signal will lead to a response in price behaviour only to the extent that agents believe that the shock which gave rise to it will persist into the future. Inability to disentangle short-term from persistent shocks will lead to a tendency to under-react to quantity signals, and hence to cause them to be drawn out over time. I would conjecture that the Austrian-style arguments about the role of errors made with respect to the production of durable goods in the business cycle can be superimposed upon this fundamentally Keynesian explanation of the persistence of output fluctuations should anyone wish to do so.[3]

Although theoretical analysis of the interaction of output, employment and prices in terms of an expectations augmented Phillips curve can thus proceed along two very different lines, it is a mistake to treat debate about these issues as simply the latest round in the monetarist controversy. Though monetarists and Keynesians are in much closer agreement than they were about the empirical stability of the demand for money function, and about the empirical nature of output-inflation interaction, they still take the same diametrically opposed views on the proper conduct of macroeconomic policy that they did a quarter century ago, and divisions of opinion here do not, as I shall argue below, depend upon differences of views about the theoretical basis of price-output interaction. Since the policy debate is undoubtedly a continuation of the monetarist controversy, and since disputes about the theoretical basis of the Phillips curve clearly deal with a new set of issues, it seems to me to be misleading to treat what I have here termed the neo-Austrian view as synonymous with monetarism, as for example Frank Hahn (1980) does. I shall discuss the policy aspects of the monetarist controversy in Section IV, but before I do so, it will be convenient to discuss the place of the monetary approach to balance of payments and exchange rate theory in monetarist doctrine.

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[1] Alternatively, as Michael Wickens has suggested to me, we may think of Δp^e as being a rational expectation of inflation conditional upon information available at an earlier time than that at which the quantity signal is received.

[2] I base the foregoing discussion on conversations and correspondence that I have had with Marcus Miller and Peter Jonson on various occasions. See also Clements and Jonson (1979).

[3] A more extensive account of these matters is given in Laidler (1975), chapter 1. Note that Brunner, Alex Cuckeirman and Meltzer (1979) provide an analysis of persistent shocks within an aggregate supply curve framework. Note also that Peter Howitt (1979) argues that, once explicit attention is paid to the role of inventories in the price setting process, the contrast between clearing-market and non-clearing-market approaches to economic modelling becomes blurred, and to some extent semantic rather than substantive in nature.

III. THE MONETARY APPROACH TO BALANCE OF PAYMENTS AND EXCHANGE RATE ANALYSIS

The monetary approach to balance of payments and exchange rate analysis represents in some respects a revival of the English Classical approach to these problem areas. However, the monetary approach differs in important ways from Classical analysis, and the very characteristics that thus distinguish it are borrowed from closed economy monetarism.[1] Most important, advocates of the monetary approach postulate the existence of a stable demand for money function, not just as a working simplification, but as an empirical hypothesis; it is this hypothesis that transforms the approach from an accounting framework into a body of substantive theory. Furthermore, in early statements of the doctrine, its proponents tied down the real income argument of that function by assuming full employment but they soon learned how to replace this assumption with an expectations-augmented Phillips curve approach to price-output interaction.[2] In effect the monetary approach to balance of payments and exchange rate analysis provided the means whereby these characteristically monetarist hypotheses were made relevant to economies other than the United States which, under the Bretton Woods system, was about as close an approximation to a closed economy that was also a separate political entity as the world has ever seen. Monetarism thus only came to be important outside the United States, not least in Britain, in alliance with the monetary approach to balance of payments and exchange rate analysis.

Until 1971 the world was on a system of fixed exchange rates against the United States dollar. Under such a system the existence of a stable demand for money function, whose arguments are beyond the direct control of the domestic authorities, implies that the money supply is an endogenous variable that must adjust to demand. Given this insight, evidence that suggests, for example in the United Kingdom in the 1950s and 1960s, that causation seems to have run predominantly from money income to money, rather than vice versa, is no embarrassment to a monetarist provided that he is also willing to attribute most of the variation in money income to causative factors originating abroad. Moreover, although the expectations augmented Phillips curve tells us that in general we should expect to find no stable inverse trade off between inflation and unemployment, post-war United Kingdom data do display just such a well determined relationship down to 1967, and this fact needs explaining. The monetary approach to balance of payments analysis suggests two complementary reasons why this should be the case. First it notes that, so long as a fixed exchange rate is to be maintained, the prices of tradable goods sold domestically are going to be determined in the long run, not domestically, but on world markets, and from this it follows that the domestic price level's long-run behaviour is going to be constrained by the behaviour of prices in the world at large. Economic agents do not have to be more than merely sensible to perceive this fact and to incorporate it into their expectations. If world prices are relatively stable, and they were until the late 1960s, then so are inflation expectations, and our expectations augmented Phillips curve, equation (1), no matter how we interpret its microeconomic origins, will predict that the data will generate a stable inflation–unemployment trade-off.

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[1] The locus classicus for pioneering work on the monetary approach to balance of payments analysis is, of course, Frenkel and Johnson (1975).

[2] See, for example, Laidler (1975), chapter 9, and Jonson (1976a).

This explanation of the existence of a stable inflation–unemployment trade-off in post-war Britain is an important component of what may fairly be called monetarist hypotheses, about the nature of the stop-go cycle in the 1950s and 1960s and about the degeneration of that economy's performance in the 1970s, which contrast strongly with conventional 'Keynesian' accounts of the same phenomena. The latter begin from the proposition that Britain has a peculiarly high marginal propensity to import, so that, under the Bretton Woods system, attempts to run the economy at a high degree of capacity utilisation, though they produced only a small and on the whole acceptable amount of inflation, were frustrated by balance of payments pressure which forced a reversal of policy. The monetarist hypothesis about stop-go, on the other hand, has it that high levels of demand were associated with high rates of domestic credit expansion which, under fixed exchange rates, generated balance of payments problems in large measure as an *alternative* to domestic inflationary pressure. The conventional view seemed to imply that Britain's economic performance could be improved by adopting exchange rate flexibility and allowing a depreciating currency to offset the balance of payments effects of a high propensity to import. With a flexible exchange rate, the economy could be run at a higher level of capacity utilisation and could grow more rapidly without interference from a balance of payments 'constraint'. According to this view a series of exogenous shocks and the autonomous activities of trade unions undermined a basically well-founded strategy when it was adopted in the 1970s. The monetarist view, on the other hand, argues that the adoption of exchange rate flexibility replaced a balance of payments problem with a domestic inflation problem when expansionary policies were pursued, and did nothing to influence the economy's ability to sustain either a higher level or rate of growth of real income. For the monetarist, therefore, the deterioration of British economic performance after 1972 was the predictable (and predicted) consequence of a policy of expanding aggregate demand against a background of exchange rate flexibility.[1]

Now the monetary approach to balance of payments analysis does far more than make monetarist analysis relevant to Britain. It also permits the explanation of the international spread of inflation in the late 1960s in terms of the repercussions in the world economy of United States monetary expansion, and it treats the breakdown of the Bretton Woods system as the culmination of this process. However, it is only fair to note that such analysis performs less well in the face of the behaviour displayed by the international monetary system since exchange rates began to float in the early 1970s. The prediction that the behaviour of exchange rates can be analysed fruitfully as if determined in efficient asset markets does seem to be supported by the data. However, a basic postulate of the monetary approach is that the equilibrium value of the exchange rate between any two currencies reflects purchasing power parity. Just as data generated under fixed rates show that the price levels of particular economies can display considerable autonomy for substantial periods of time, so under flexible exchange rates systematic and persistent deviations of exchange rates from purchasing power parity do seem to be possible. Though purchasing power parity considerations underlie the behaviour of long period averages of data, implying that, ultimately the terms of trade between countries are independent of monetary factors, there seems to be ample room for short run deviations from the long run pattern. Just why this should be the case, and what explains the patterns of such deviations as we observe, are important and, at the moment, open questions.[2]

Be all that as it may, the present regime of flexible exchange rates came into being because the authorities in various countries learned that they could not control such politically important variables as domestic inflation and unemployment while continuing to adhere to the Bretton Woods arrangements. The diversity of inflation rates among countries since 1971 supports the view that the adoption of flexible rates allows such variables to have their behaviour predominantly determined at home; and long before the 1970s, monetarists, not least of course Friedman, argued that the adoption of exchange rate flexibility was a necessary prerequisite to the pursuit of monetarist policies in individual countries. In the 1970s we have seen the emergence of conditions under which individual countries could implement independent monetary policies, and as I have suggested above, it is mainly on the matter of policy prescriptions that sharp differences between monetarists and their opponents persist. I shall therefore devote the penultimate section of this paper to a discussion of these matters.

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[1] It is worth pointing out that I set out much of the foregoing argument in my 1972 Lister Lecture. See Laidler (1975), chapter 10, where the lecture is reprinted. The argument is developed in further detail in Laidler (1976*a*).

[2] Frenkel (1980) provides a useful and accessible overview of the issues involved here and the evidence on them.

IV. POLICY ISSUES

As we have seen, when it comes to propositions about the demand for money function, the relationship between money and money income, and output inflation interaction, there is a real sense in which 'we are all monetarists now'. The issues that nowadays distinguish monetarists from their opponents concern the conduct of economic policy. As he did in the 1950s the monetarist still wants fiscal policy to stick mainly to its traditional tasks of influencing resource allocation and the distribution of income and wealth, and monetary policy to adhere to some simple rule under which the monetary aggregates do not react to short-run fluctuations either in real output or prices; the Keynesian on the other hand is still a proponent of activist stabilisation policy.

These policy issues are not independent of the theoretical questions that we have discussed earlier, and indeed, much of the current popularity among monetarists of the neo-Austrian approach to the analysis of price-output interaction stems from the erroneous belief that it provides the only sound basis for scepticism about the effectiveness of activist stabilisation policies. Many Keynesians focus their attacks on that same piece of analysis in the belief, just as erroneous, that if they succeed in refuting it, they also succeed in restoring the case for activist stabilisation policy. Now the approach in question does indeed imply that output and employment can be influenced by policy only to the extent that it causes prices to vary in a way that agents in the private sector do not forsee, while the rational expectations hypothesis tells us that if such effects were systematic, the private sector would discover the fact, adapt to it, and thereby render policy ineffective. It follows at once that the only macroeconomic policy that can influence income and employment is a purely random one, and no supporter of 'fine tuning' could possibly recommend that.

The argument just sketched out is logically watertight. So is this counter-argument: if inflation–output interaction reflects the role of quantity signals in the mechanism whereby various shocks, including those imparted by policy, have their effects transmitted to prices, the way is opened for monetary and fiscal policy to exert a systematic influence upon output and employment. However, there is much more than this to be said about the feasibility and desirability of activist policies. If there was not, how could it be that Friedman (1960) was able systematically to state his views on policy more than a decade before Lucas (1976) and Sargent and Neil Wallace (1975) developed the theoretical arguments that are now so widely regarded as the only logical underpinning of those views? The Lucas–Sargent–Wallace analysis certainly provides a *sufficient* basis for monetarist policy prescriptions, but it is not a *necessary* basis for them: it is one thing to say that the world is so structured that policy can systematically influence output and employment in the short run, and another thing altogether to say that policy makers have enough knowledge to use that ability in a way that will be beneficial.

If it is agreed that in the long run the Phillips curve is essentially vertical – or perhaps even positively sloped if allowance is made for super-non-neutralities

– then that certainly does not rule out the possibility of the economy slipping below its natural rate of output in a short run that may be of considerable duration, or the possibility that there exists an appropriate menu of monetary and fiscal policies that might hasten its return to that natural rate without generating any serious costs during the transition. As a first step to exploiting this possibility though, those in charge of policy would need to know what the natural rates of output and employment actually are. As a second step, they would need accurate information upon where the economy actually is, and where it would move in the absence of a policy change, not to mention at what pace. Armed with this not inconsiderable amount of information, policy makers would know that they were in a position where it might be useful to deploy some policy measure or other. To design the policy would of course require them to know about the size and time path of the economy's response to the measures they might take, factors which even the loosest application of the rational expectations idea tells us are likely to be influenced by the policy measures themselves.

Now I will readily agree that we have the mathematical and statistical tools available for tackling the design of stabilisation policy along the foregoing lines, and I also agree that our econometric models contain answers to all the quantitative questions that I have just raised. However the conclusion that I draw from all this is that we are probably rather good at fine-tuning econometric models.[1] One can rest the monetarist case against activist policy on the proposition that markets always clear and that expectations are rational, but one can also rest it on the much more down-to-earth proposition that we are too ignorant of the structure of the economies we live in and of the manner in which that structure is changing to be able safely to implement activist stabilisation policy in the present environment, or in the foreseeable future.

Among the penalties for making errors in fine tuning that concern monetarists are those that come in the form of uncomfortably high and perhaps accelerating inflation that would result from setting over-optimistic targets for employment and output. Thus, if there is something in the policy environment that weakens the ability of the inflation rate to accelerate, the penalties for such errors are milder, and the case against fine tuning developed above can be softened a little. In the 1950s and 1960s, there can be little doubt that the British authorities did succeed in fine tuning income and employment variables within the rather narrow bounds laid down by what then appeared to be balance of payments constraints. The monetarist interpretation of that period implies that the background of monetary stability implicit in the commitment to a fixed exchange rate was the real constraint on how far fine-tuning policy could be pushed and also that it provided the necessary conditions for its limited success. However the fact remains that the experience in question does show that a limited degree of fine tuning is feasible if only a background of long-run price stability is assured, and is seen to be assured.

It is hard for a monetarist to see how one could avoid assigning to monetary policy the role of providing that necessary assurance.[1] A fixed exchange rate regime is one way of tying down monetary policy, and the adoption of some sort of a money supply growth rule would be an alternative. But this means that fine tuning would have to be by fiscal policy. Such a conclusion will be of little consolation to American Keynesians who are forced by the inability of American institutions to deliver rapid changes reliably in fiscal variables to assign to monetary variables a far more important role in stabilisation policy than their British counterparts ever did. However it may do a little to cheer up the British, for whom a return to the days of 'never had it so good' might be a welcome relief from the consequences of 'going for growth'.

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[1] John Helliwell has suggested to me that the application of policy optimisation techniques to such models is better regarded as a test of their validity than as a preliminary to actual policy making.

As should be apparent from the last few paragraphs, I regard the question of whether governments should or should not indulge in a limited amount of fiscal fine tuning as a secondary issue for monetarists.[2] Related questions concerning public sector borrowing and the share of the public sector in National Income are even more peripheral to the monetarist debate. No matter what the public perception of these matters might be, I insist that monetarist doctrine tells one that there are severe limits to the extent to which public sector borrowing can be financed by money creation, and beyond that has nothing to say about whether a 'high' or 'low' level of such borrowing is in and of itself desirable. Similarly monetarism offers no guidance as to how big the public sector of any economy ought to be. It is a macroeconomic doctrine and the issues at stake in debates about the size of the public sector, the welfare state, and so on are fundamentally microeconomic in nature.

Monetarism however has had a good deal to say about wage and price control policies. It has opposed them, not just for ideological reasons, but for the much more down to earth reason that they have not been expected to work.[3] This position has been mainly and justifiably defended on the basis of empirical evidence: in the post-Korean war period it is hard indeed to find any wage-price control scheme that has not produced disappointing results over any period longer than a few months. However monetarists have also sometimes opposed controls on theoretical grounds, particularly in the context of open economies. They have noted that under fixed exchange rates the behaviour of world prices and hence the domestic prices of traded goods cannot be controlled by domestic regulations, any more than can the money supply. They have also pointed out that under flexible rates, though the money supply is under control, neither the exchange rate nor world prices can be regulated separately. In either case in an open economy wage and price controls inevitably impinge upon 'the domestic component' of the price level and are hence policies towards relative prices. For that reason, they cannot for long influence the behaviour of the general price level, unless they are accompanied by a battery of quantitative restrictions, not least on foreign trade, that very few of their advocates have been willing to contemplate.

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[1] It is worth noting that the Radcliffe Committee (1959) regarded the task of monetary policy to be the achievement of background stability for the economy. Their view differed from the monetarist approach to the same issue in putting interest rates at the centre of the policy making process rather than any monetary aggregate. In the kind of sociological theorising about inflation that was particularly popular in Britain in the early 1970s incomes policy was to be assigned the task of stabilising prices and expectations.

[2] I would emphasise that this is not a new position on my part. It is one that I have consistently taken. Of course the questions about the effectiveness of fiscal policy are important ones for macroeconomists, and the Brown Univesity Conference on Monetarism (see Jerome Stein, 1975) dealt almost exclusively with such issues. I accept Purvis' (1980) judgment that the outcome of that conference was to show beyond a reasonable doubt that 'fiscal policy matters' but also his judgment that in retrospect the debate about the effectiveness of fiscal policy has not been the most important one in the monetarist debate, however important an issue it might be in its own right for macroeconomics.

Finally note that the foregoing discussion ignores the question as to whether, even if we had enough knowledge to ensure that fine tuning could be used beneficially, the political process would permit it to be used in that way. This question, as Milton Friedman has pointed out to me, is a vital one in any practical debate about activist policies.

[3] Of course there has been a considerable ideological content to the monetarist debate and I would not deny that for a moment. Nor would I take the position that there is anything reprehensible about ideological debates *per se*. I play these issues down in this paper not because, from a broader perspective I would regard them as unimportant, but because my expertise as an economist does not put me in a position to say anything very useful about them.

In the 1960s wage and price controls came to be regarded as an alternative to monetary policy in the control of inflation, and in the early 1970s serious attempts were made in both Britain and the United States to use them as such. In both cases the attempts failed sufficiently dramatically that the proponents of controls now regard them at best as supplementary devices to be deployed in harmony with more traditional demand side policies rather than as a serious alternative to such measures. Though such a viewpoint stops short of the blanket opposition to controls that, along with other monetarists, I would still be willing to defend, it does represent a substantial move in a monetarist direction from positions taken a decade ago. Here, as in other instances, much of the heat has gone out of the monetarist controversy.[1]

There is more to practical monetarism than scepticism about fiscal fine tuning and opposition to wage and price controls. Its key positive tenet is that monetary weapons should be assigned to the attainment and maintenance of long-run price stability, and hence that those same monetary weapons not be used for fine tuning purposes. In this respect, as with the other components of the doctrine which we considered earlier, there has been a considerable growth in the acceptance of monetarism. Propositions about the desirability of setting rules and targets for the growth of monetary aggregates are now commonplace in the statements of Central Banks. If monetarists complain – and they do – about the failure of Keynesian policies since the mid 1960s, then simple fairness requires them to say something about the lessons that they have learned about the viability of their own policy proposals from what many observers believe to have been widespread and sustained efforts to apply them during the 1970s.

[1] Michael Parkin, Michael Sumner and Robert Jones (1973) is still an admirable source of information about wage and price controls in the British economy. Michael Walker (ed.) (1976) contains much useful information on other countries. Note that the views that I state here about the importance of using wage and price controls, if they are to be used, in conjunction with monetary and fiscal policy, rather than instead of such policies, are those of the McCracken Committee. See McCracken *et al.* (1978).

The first thing to be said on this score is that the case for monetary growth-rate rules, as initially stated by Friedman (and Edward Shaw) was put in terms of the capacity of such a policy to *maintain* stability in an already stable economy – it was a policy prescription for *staying out* of trouble. However it has been only since our economies have found themselves deeply *in trouble* that monetarist policy proposals have attracted the attention of policy makers. There is much less unanimity among monetarists about how to tackle the problem of restoring stability than there is about how to maintain it. Though all monetarists would agree that a return to a modest growth rate of some monetary aggregate or other is the long-run goal, the neo-Austrians would favour a rapid return to such a rule, while those of us who take a more traditional view of the nature of the Phillips trade-off have advocated 'gradualism'.

Unless we take the cynical view that the rhetoric of central bankers bears no relationship to their intentions, we must conclude that in a number of places attempts have been made to implement gradualist policies. There are two questions to be asked about those attempts: first, is it the case that those attempts have resulted in a systematic and gradual reduction in the rate of growth of any monetary aggregate? and second, if such attempts have anywhere been successful, did that success lead to a reduction in the inflation rate? As is well known, policy has in the main failed on the first count. Only in Canada, to the best of my knowledge, have the authorities set, and on the whole succeeded in achieving, pre-stated monetary growth targets over an extended period. It is equally well known that the single most important reason for this failure, at least in the United States and Britain, has been the unwillingness of those in charge of monetary policy to give up setting interest rate targets when they adopted targets for the money supply, combined with a proclivity to stick with the interest rate target when the two came into conflict, as they inevitably had to sooner or later. This was not been universally the case, however. Germany and Switzerland have had difficulty sticking to money supply targets because of concern with the behaviour of the exchange rates rather than interest rates, as Sumner (1979) has noted, while political concern over the exchange rate and interest rates during the winter of 1979–80 posed a serious threat to the continuation of the Canadian experiment.

It would be easy enough to argue in the light of all this that recent experience offers essentially no test of monetarist gradualism, but that seems to be going too far. Monetarists have usually treated questions of income distribution and resource allocation as separate and distinct from those of monetary policy. This dichotomy is a useful one when the problem for monetary policy is to *maintain* already existing stability, but can all too easily lead one to neglect the way in which monetary policy interacts with allocation and distribution when its implementation requires sharp (albeit temporary) increases in interest rates. A key factor here is of course the political importance of the housing market, and of the behaviour of mortgage interest rates. In retrospect, it is clear that monetarists did not do a very good job of educating policy makers – both elected and otherwise – about the problems that adopting monetarist policies would generate in this area. Some of us did raise these matters, but apparently not loudly enough.[1] High interest rates have turned out to be more difficult for politicians to face up to than high unemployment rates, and that was not foreseen.

There are also technical problems with implementing monetarist policies. The manipulation of interest rates as the centrepiece of monetary policy long antedates the Keynesian revolution, and was quite appropriate in economies whose monetary rule was to maintain convertibility into gold or some other currency at a fixed price. However the day-to-day operating procedures of central banks, the very organisation of their decision making processes, not to mention the structure of the private markets in which they operate are all geared by force of tradition to making and implementing decisions about interest rates. Although monetarists have done a great deal of work on the basic economics of the money supply process under different policy regimes, and though some of them, notably Brunner and Meltzer, have frequently scolded their colleagues for neglect of these issues, hindsight suggests that they did not recognise the extent to which the problem of implementing a different monetary policy might require a basic overhaul of institutions if it was to be solved, an overhaul that might involve a considerable break with traditional practices, and hence be hard to implement, or that, if they did, they were unable to convince policy-makers to undertake that overhaul at the same time as they adopted monetarist rhetoric.

If central banks, apart from the Bank of Canada, have not in fact succeeded in smoothly slowing down monetary expansion rates in a sustained way, a number of them have nevertheless managed to create contractions in monetary growth rates that have been sharp and persistent enough to bite. Associated with these contractions, have been the 'shifts' of the demand for money function that I discussed earlier in this paper. As the reader will recall, I argued that these shifts were, in all probability, real phenomena, and not statistical artifacts, that such shifts were nothing new, and that they were probably to be explained, at least in part, by institutional changes which themselves might plausibly be interpreted as a response to monetary policy. I believe that these shifts of the demand for money function, relatively small though they have been, force us to reassess a fundamental tenet of practical monetarism, namely the injunction to fix *ex ante* a growth rate rule for the money supply, and then ensure adherence to it by taking away from the monetary authorities the discretion to do otherwise.

Objections to such a proposal have frequently been cast in terms of the question 'How are you going to define the money supply for purposes of implementing this policy?' The answer typically given has been that it does not much matter, because if the rate of growth of one monetary aggregate is pinned down, all the others will end up behaving consistently, at least on average over the kind of time periods for which stability in monetary policy is really important. That answer is surely valid if one is dealing with an economy in which there is no institutional change in the private sector, but that does not make it as adequate a response to the question as I once thought it did. Suppose we agreed to set a rule for the growth rate of M1 and that initially we could agree on what assets to include in that aggregate. What if after the rule had been implemented some new asset, for example a new kind of chequing account, evolved? Perhaps the demand function for M1 as initially defined would then shift, but if *ex post* we included the new asset in our definition of M1 we might still be able to show that the demand for narrow money had not 'really' shifted, after all.

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[1] See Laidler (ed.) (1976*b*), particularly chapters 7 and 9, for an earlier statement of my own views on the role of the housing market and its interaction with monetary policy and inflation. I readily acknowledge that the source is an obscure one.

Such problems would not arise if we were not too specific in laying down the precise definition of money that was to bind policy makers in the future. However, to do that would leave it open to the discretion of someone at some time in the future to decide just how to define the monetary aggregate whose rate of growth was tied down with a rule, and that amounts to giving them the discretion to ignore the rule in question. It is hard to resist the implication that it does not seem to be possible, let alone desirable, to eliminate all scope for discretionary policy in a world in which the monetary system is in a state of evolution. I hasten to add that this does not imply that attempts to implement short-run fine tuning of the economy by way of manipulating interest rates are all of a sudden alright, or that it is fruitless to require central banks to announce target ranges for monetary expansion over, say, one or two year time horizons. However it does imply that it is as a practical matter impossible to prevent policy makers doing the wrong things if they so wish by tying them down to a monetary growth-rate rule. Unless we can accurately foresee the path that innovations in the financial sector are going to take, someone somewhere is going to have to be granted the discretion to deal with them when they arise. The monetarist injunction not to use monetary policy for fine tuning is not affected by these considerations, but the proposal that the once and for all enactment of a simple rule can lead to that injunction being implemented is undermined. That seems to me to be a rather severe criticism of monetarist policy doctrine.

V. CONCLUDING COMMENTS

As the reader will by now have seen, it is my view that the core of monetarism has consisted of a series of empirical propositions and policy prescriptions, all of which are quite consistent with mainstream economic theory. One can approach the analysis of social questions in terms of the maximising behaviour of individual agents without believing in a stable demand for money function, or a vertical long-run Phillips curve, but evidence that such relationships exist need in no way disturb one's theoretical preconceptions. Although there have been episodes in the monetarist debate where the relevance of mainstream economics to the analysis of such social questions as inflation and unemployment has been vigorously questioned, particularly in Britain, it has mainly been about questions amenable to being settled with reference to empirical evidence, as Mayer (1978) has also argued.

Viewed in this light, I would suggest that, in all but one aspect, the monetarist debate is as close to being over as an economic controversy ever is. The demand for money function does seem to be more stable over time than the early critics of monetarism suggested, while shifts in it have been neither new phenomena, nor of sufficient magnitude seriously to undermine long-run relationships between money and money income. Puzzles about 'reverse causation' in the data for countries such as Britain cease to be puzzles when the openness of the economy and the nature of the exchange-rate regime are taken account of. There is now much less disagreement about the empirical nature of the interaction of real income and inflation: there is a short-run trade off between inflation and unemployment and it does seem to vanish in the long run. Though we should not under-rate the importance of the consensus that has been achieved on the foregoing issues – or neglect to mention explicitly that the consensus in question is not universal – this does not mean that there is now no controversy in macroeconomics. As we have seen two areas remain contentious.

First, one aspect of the monetarist debate remains alive, and that concerns the proper conduct of monetary policy. I doubt that my own view, that the case for governing monetary policy by rules is impossible to sustain in the face of careful consideration of the influence of institutional change on the behaviour over time of the demand for money function, will find a great deal of support among monetarists at present, while I would be surprised to find it regarded as sufficient of a concession to 'fine tuning', and it really is no such thing, to satisfy the Keynesians. Thus, I would expect debates about this matter to keep the monetarist controversy alive for a while yet.

The other, and in my view far more important, issue has to do with the market-theoretic foundations of macroeconomics. The issues raised by Lucas and his collaborators are not the issues that have traditionally concerned participants in the monetarist debate and it is misleading to approach them as if they were. The debate about the assumptions of clearing markets and rational expectations as a basis for macroeconomics is a new one, and as Brian Kantor (1979) has suggested is really about whether Keynes' *General Theory* carried economics forward or took it on a fruitless detour. Though it has very little to do with monetarism, it nevertheless concerns issues of fundamental theoretical importance for macroeconomics. Let us hope that this new controversy proves to be as fruitful as the monetarist controversy has been.

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[FROM VIEWPOINT/FALL 1981]

Why Tight Money Causes High Interest Rates

By Henry A. Latané

In what is now a classic article (1954), Henry Latané showed a close relationship between income velocity and interest rates. This fall, Latané tested the original equations on data from the mid-50's through 1981. Not only did the relationships he predicted 30 years ago hold; but Latané believes they suggest compelling reasons why President Reagan's economic policies cannot succeed.

Rarely has the Federal Reserve's tight money policy been recognized by economists as the primary cause of the present high interest rates. Yet there is clear evidence that this policy is at the heart of the matter.

The tighter the monetary policy, the lower the proportion of the Gross National Product (GNP) that is held as cash, the less people have to spend, the lower bond prices will be and the higher interest rates will be.

At the same time, the tighter the monetary policy and the smaller the amount of available cash, the more times that cash will turn over during the course of a year (a phenomenon known to economists as income velocity). Therefore, tight monetary policy is associated with decreased cash balances, increased turnover for those balances (increased income velocity), and increased interest rates.

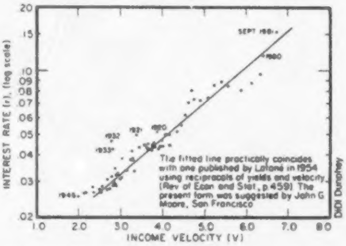
These relationships not only are justified by theory, but they are confirmed by the record of the last 60 years. Research I published in 1954 showed a strong association between interest rates and income velocity for the years 1919-1952. A recent update shows that interest rates and income velocity have continued to move together through 1981.

	Annual Average	
	Velocity (GNP/M1-B)	Interest Rates (percent)
1922-1929	3.75	4.40
1948-1950	2.42	2.70
1959-1963	3.67	4.36
1979-1981	6.56	12.32
Sept. 1981	6.8	15.4

Since World War II, income velocity has been increasing, and interest rates have risen. During the period from the 1920's to the late 1940's when income velocity declined, so did interest rates. When velocity rose again in the early 1960's to reach its pre-Depression levels, so did interest rates.

The relationship of income velocity and interest rates cannot be disregarded in formulating monetary and fiscal policy. Stable velocity—and hence stable interest rates—is as essential to balanced economic growth as is steady monetary growth. Over-reliance on monetary growth alone has led us into our present predicament. The Federal Reserve Board must eventually relearn that the cost of money is measured by interest rates as well as by commodity prices.

Long-Term High Grade Bond Yields and Income Velocity, 1919 - Sept. 1981



The current Reagan economic policy assumes that restrictive monetary policy can be used to control inflation and to lower interest rates while continuing to allow economic growth. Based on the record, this is unlikely to occur. Lowering interest rates has historically been associated with lowering—not increasing—velocity.

If an increase in income velocity does occur, the record indicates it will be accompanied by extreme upward pressure on interest rates, and the increased likelihood of a financial collapse. If the increase in velocity does not occur, it will be because the growth of nominal GNP is lower than the growth of the money supply (M1-B).

If the growth of the money supply is restricted to 3 percent per year—a target for economic growth that has frequently been cited—then the growth in nominal GNP will be less than 3 percent because, by definition, velocity equals GNP divided by the money supply. This pattern of growth is possible, but only under depression conditions. And even under those conditions, the present high velocity would keep interest rates high and make it unlikely for rates to fall enough to stimulate the economy. So the depression scenario would be reinforced.

Dr. Latané is Meade H. Willis, Sr. Professor of Investment Banking, Emeritus.

CASH BALANCES AND INTEREST RATES--
Twenty-eight Years Later

Henry A. Latané
Willis Professor of Investment Banking Emeritus
UNC Chapel Hill

In portfolio theory capitalized values of financial assets are directly associated with proportionate cash balances (k). When wealth-holders find themselves with too much money so that k is high (velocity is low) they tend to buy other financial assets thus forcing up capitalization factors (1/r) and hence reducing interest rates. When interest rates are high (capitalization factors low) wealth-holders economize on cash balances thus lowering k (and increasing v). This portfolio balance relationship can be expressed either by

$$\hat{k} = b_0 + b_1(1/r)$$

or

$$\widehat{(1/r)} = b_0 + b_1 k$$

where b_0 and b_1 are the intercepts and slopes of the two equations. These models were developed and tested by me in 1954 [Review of Economics and Statistics, 1954, pp. 456-460].

In 1963 Carl Christ of Johns Hopkins made the following comments on this paper:

> Originally, this was intended to be a study of the effect of interest rates on the velocity of circulation, using as a point of departure a paper by Latané. Latané plotted the inverse of Moody's Aaa bond rate on one axis and on the other axis the Cambridge k, defined as currency and demand deposits divided by GNP, for the years 1919-1952. The scatter diagram looks roughly linear with a positive slope. (If the Cambridge k and the inverse of the interest rate are linearly and

positively related, then k and the interest rate itself are related by a hyperbola that looks much like the Keynesian liquidity preference curve. Latané fitted two straight lines to these data, one including all of the years from 1919 to 1952 and one omitting 1932, 1933, 1942, 1946 and 1947 because, he said, "They were not considered representative". Even without omitting these years, the inverse of the long-term rate explains 76% of the variation in k. As the years went by, I plotted the new data on Latané's graph, and something happened that is very remarkable in the brief history of econometric equations: the new points were closer to the regression line than the points of the sample period. I fitted the same equation by least squares to a longer period 1892-1959 and obtained almost the same slope (.72 as against Latané's .80), and again the inverted interest rate explained 76% of the variation of k. ["Interest Rates and Portfolio Selection"in Measurement in Economics. Stanford University Press, 1963.]

Perhaps more recent outcomes of regressing k' on 1/r can be summarized by an extension of Christ's results:

Table 1

	b_0		b_1	R^2	Period
IIa*	.100	+	.795	.76	1919 - 1952
IIb*	.131	+	.716	.76	1892 - 1959
	.090	+	.846	.75	1919 - 1958
	.095	+	.740	.88	1959 - 1980
	.077	+	.888	.89	1919 - 1980

*Christ's results

These data and the charts speak for themselves. There is a highly significant relationship between capitalization factors and proprotionate cash balances and hence, by definition, between long-term interest rates and velocity.

The explanatory power of the 1954 model measured in R^2 actually was higher after it was first published than in the pre-publication period and the regression coefficients are very stable over the whole period.

Chart 1 shows the long-term relationship. Since World War II, interest rates and velocity both have risen sharply but during the period from the 1920s to the late 1940s when velocity declined so did interest rates. When v rose again in the early 1960s to reach its pre-depression level, so did interest rates. These data are shown in Table 2:

Table 2
Annual Average

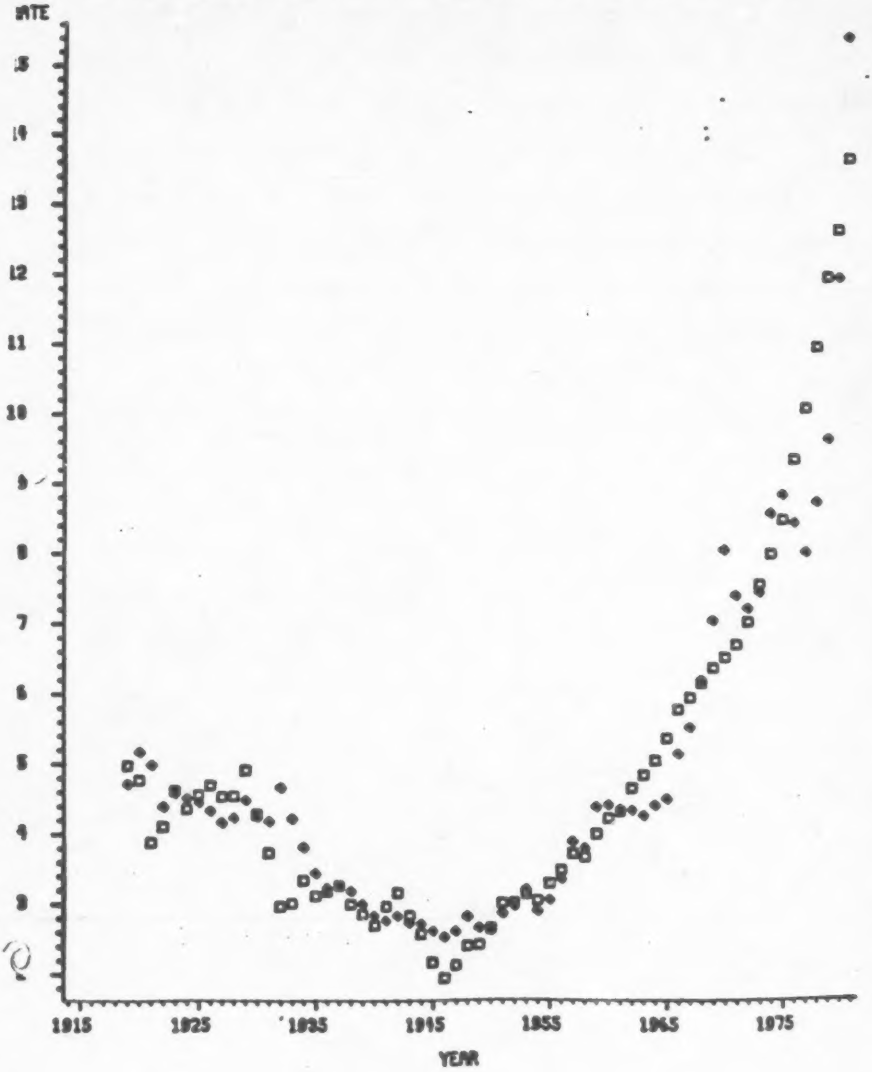
	Velocity (GNP/M1-B)	Interest Rates (Percent)
1922-1929	3.75	4.40
1948-1950	2.42	2.70
1959-1963	3.67	4.36
1979-1981	6.56	12.32
Sept. 1981	6.8	15.4

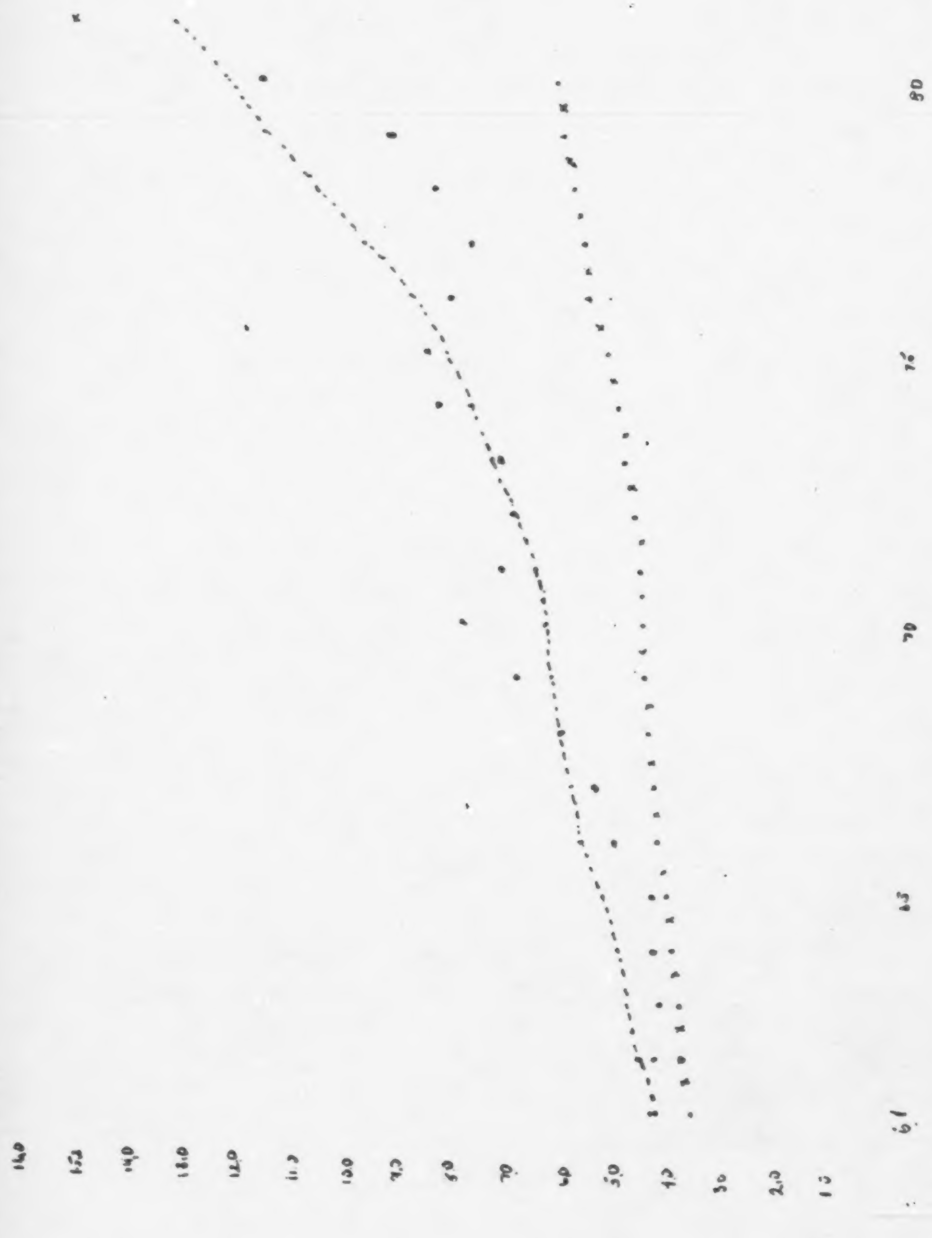
The predictive power of the 1954 model meets the requirements for good theory outlined in Professor Milton Friedman's extremely influential "Essay on the Methodology of Positive Economics". In this essay Friedman says:

> Viewed as a body of substantive hypotheses, theory is to be judged by its predictive power for the class of phenomina which it is intended to "explain". Only factual evidence can show whether it is "right" or "wrong" or, better, tentatively "accepted" as valid or "rejected".

As I shall argue at greater length below, the only relevant test of the validity of a hypothesis is comparison of its predictions with experience. The hypothesis is rejected if its predictions are contradicted ("frequently" or more often than predictions from an alternative hypothesis); it is accepted if its predictions are not contradicted; great confidence is attached to it if it has survived many opportunities for contradictions. Factual evidence can never "prove" a hypothesis; it can only fail to disprove it, which is what we generally mean when we say, somewhat inexactly that the hypothesis has been "confirmed" by experience. [Friedman, 1953, pp. 8-9.]

INTEREST RATES AND MONEY VELOCITY

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75
80

The Underlying Model

In spite of the continued high correlation and stable regression coefficients of the linear relation between proportionate cash balances and capitalization factors, the significance of the interest rate-velocity nexus has not been generally recognized. For example Eugene Fama [AER, Sept. 1981, p. 549] refers to "the general finding in the money demand literature that the interest rate is the weakest variable in empirical money demand equations". There are a number of possible reasons for this lack of recognition including variable specification and the form of the equation.

In the first place, one of the biggest problems in testing for monetary effects is the confounding of two separate demand functions--(a) the demand for money to facilitate transactions and (b) the demand for liquidity. The 1954 equation is concerned only with money to facilitate transactions and hence Money is defined as M1 or M1B. Carl Christ [1963, p. 205] suggests that the reason that the relationship between k and 1/r fits so poorly when time deposits are put in the money stock and so much better when they are not is because part of the effect of the change in interest rates might induce shifts into time deposits when rates are high and back into demand deposits when rates are low.

The confounding of monetary demand functions is widespread in the literature. Friedman and Meiselman made a well publicized study showing that monetary velocity was much more stable than the investment multiplier. In this study, they find that velocity including time deposits is more stable than excluding such deposits. However, they ignore the effects of interest rates on velocity. But clearly interest rates have a differential effect on demand for cash balances and demand for time deposits and equally clearly, allowance should be made for this effect in evaluating the demand functions for the two variables.

As another example of confounding consider the present confusion about the effects of the great expansion of liquid assets. Robert Weintraub states the matter clearly in a Letter to the Editor WSJ Oct. 14, 1981:

> Robert A. Mundell writes that M1B is no longer a reliable money measure because of "the confirmed role (off-shore) markets play in contributing to inflation".
>
> As a matter of logic, offshore markets and other new financial developments can contribute to inflation only if they increase the rate of rise of money's velocity. However, they have not. Since the early 1950s, the rate of rise of M1B velocity has been quite steady--3.2 yearly. It increased 3.4 yearly from 1956 to 1967 and 3.0 from 1958 to 1980. From 1977 to 1981 (first quarter), despite the enormous growth of such factors as Eurodollars and money market mutual funds, the yearly increase in M1B ranged only between 2.2% and 4.3%. In the 1956-1960 period, it ranged between 1% and 6.6%.
>
> My point is not a nitpick. Mr. Mundell's arguement depends crucially on MIB's velocity rising more rapidly and uncertainly in recent years.

Use of the proper interest rate also affects results. Short rates usually are used. However, portfolio theory calls for balancing cash holdings with the capitalized value of long-term financial assets and the reciprical of the long-term rate is the logical capitalization factor. For example, a 3 percent change in long-term rates from 3 to 3.09 would cost the holder of perpetual bond a full year's interest through a decline of capitalized value. Similarly a 6% change in the long rate from 6 to 6.36% also would cause the loss in capitalized value equivalent to one year's interest.

Christ's [1963, p. 205] discussion of this point is well taken:

> If the variations in k are indeed due to changes in interest rates, it might be expected that short-term rates would provide a better explanation than long-term rates, since short term assets are better substitutes for money than are long-term assets. Yet, as stated in the last sentence of the preceding paragraph, the reverse was true. A possible key to this puzzle is the following: Suppose that the demand for real currency and demand deposits depended linearly on real wealth (expressed as capitalized real GNP) and on real GNP itself. Then a long-term rate would be better than a short-term rate for capitalizing GNP.

The form of the testing equations also is important. Since the end of WWII both velocity and nominal interest rates have trended upwards. Most effort in determining monetary effects have eliminated these trends and have concentrated on explaining deviations from trends. But the trends themselves are a crucial part of the problem and cannot be disregarded. We are interested in the effects on interest rates not only of unexpected deviations in money and velocity but also in the actual velocity because this velocity is a measure of the work done by a given quantity of money and so influences the capitalization factors necessary to bring money holdings in line with holdings of other capital assets.

Policy Implications

The policy implications of the charts possibly can be shown best by use of the old equation of exchange

$$MV=PT$$

The original quantity theorists assumed that V, the turnover of money, was approximately constant and that T, representing real income was exogenous so that changes in M would work themselves out directly by changes in prices. The newer version of the theory is that the steady growth in V over the post-war years has been an institutional development. With either version V has little explanatory power for other economic variables such as real or nominal interest rates.

The question of whether interest rates are largely independent of V, as is the position of the quantity theorists, or are being led upwards by the rise in velocity as is effected in Chart 1 is of great importance at the present policy juncture. If we accept the Fisher effect hypothesis that high nominal interest rates are caused by inflation which in turn is caused by printing too much money, then we are at a loss to explain the present juncture of events.

The following quote from Leanord Silk's Comumn in the NYT of Feb. 12, 1982 gives the present position among the monetarists:

> If the academic economists are confused, so are the alleged financial experts. Leif H. Olsen, the chairman of the Citibank's economic policy committee says "The prevailing opinion among manager's of financial businesses is that interest rates cannot be predicted". ...Despite the great churning the market has been going nowhere as interest rates hang high. Olsen, a monetarist, declares that interest rates "remain inexplicably high relative to cooling inflation and a declining economy

> as the recession continues. He notes that real interest rates (after subtracting current inflation) have averaged about eight percent since the end of 1980.

High real rates, of course, are much more detremental to investment than high nominal rates which may be offset largely by inflationary gains. The last time real rates were at or over 8% was in 1932-1933.

On the other hand, if we accept the validity of the relationship between V and r demonstrated in the charts then we can explain the fact that interest rates still are at or near their peaks even though inflation obviously has declined. If the past is any guide to the future and the picture on the chart is at all realistic then a V of 7.0 or more would be accompanied by a long-term rate of over 15%. The present position on the chart is the exact antithesis to the so-called liquidity trap which prevailed when interest rates were very low. When velocity and rates are low a 10% change in velocity from 2 to 2.2 would lead to an estimated change of only a .2 percentage point in estimated interest rates. At present levels of V, a 10% change in velocity from 6.0 to 6.6 would lead to a 2.6 percentage point change in estimated interest rates and a 10% change from 7 to 7.7 in V would lead to a change of 5.3 percentage points in long term rates. Present velocity is around 6.7 so we are, and will continue to be, in an area of extremely high and volitile interest rates unless present monetary policies are revised drastically.

By definition V=PT/M hence it is a truism that V can be reduced only if M increases faster than PT. In the present environment a speed-up in monetary growth might well be self-defeating in that it would lead to an increase in inflationary expectations and hence in P, the price level, so that interest rates and velocity might get even higher. More likely, under present depressed conditions an increase in money supply would not necessarily rekindle inflation, but would lower V and interest rates. From a longer range the major adjustments necessary to get V and r down substantially and to correct the unfortunate post-war trend in nominal interest rates may well call for some sort of tax incentives for price and credit control.

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Monetary Control and the Critics

By PROF. RAYMOND LOMBRA
Pennsylvania State University

The Federal Reserve is a beleaguered institution. The considerable volatility of interest rates and money growth over the past 30 months have led monetarists to argue that the changes in monetary control announced in October 1979 represented more form than substance.

Nonmonetarists, presumably looking at the same facts, conclude that monetarism has been tried and shown to be a failure. They call for an immediate easing of policy — i.e., higher money growth and, allegedly, lower interest rates. Even foreign central banks, normally reluctant to criticize brethren, have publicly lectured the Federal Reserve on the disruptive effects purportedly generated by its policies.

Simply put, criticisms of the Fed and advice on how to "improve" are not in short supply in either financial or academic circles. Without denying the usefulness of a continuing dialogue on crucial aspects of monetary policy, I submit that the unrelenting criticism of the Fed's strategy and tactics, however well intentioned and appropriate, has often confused rather than clarified issues.

The most recent example of this is the charge that the Fed's nonborrowed-reserve approach to monetary control, first implemented in October 1979 and, according to the Fed, refined (improved?) in various ways since, does not represent a substantive change in the formulation and implementation of policy. Analytically and empirically, there is little doubt in my mind that a fundamental change has occurred. Whether it goes too far or not far enough is a subject better left for another day. Here I will confine myself to describing the essential features of the change and contrasting them with monetarist-type recommendations and the Fed's former procedures.

Believing that pictures are worth many words, I have depicted the guts of the story in two simple graphs. (Knowing that there are those who normally eschew such "esoteric" devices, I have subjected what follows to Alfred Marshall's litmus test. This giant of the economics profession, himself no lover of the unnecessary use of mathematics and graphs, once argued that if you could not explain the point in words to your wife, it must be wrong. Sexist connotations aside, this comment passes.)

The Old and the New

Shown in Figure 1 are three different money supply (MS) functions, each applicable to a different Fed operating regime, and one money demand (MD) function. The latter is downward sloping, indicating that as interest rates fall (rise), the public will increase (decrease) their demand for money. Under the procedures used by the Fed from the early 1970s up to October 1979, the policy-makers came together each month in a meeting of the Federal Open Market Committee to select a target for the money stock (M*) and then, given their estimate of the slope and position of the money-demand function, they picked the level of the interest rate — the federal funds rate to be specific — they thought would be consistent with M* (i1 in Figure I).

The manager of the Fed's portfolio was then instructed to supply reserves, and therefore money, as needed to peg the funds rate. The perfectly elastic supply of reserves and money which resulted is captured in MS (old) on Figure 1. If everything turned out as the Fed anticipated (point A in the figure), the Fed would achieve its monetary target.

Unfortunately, more often than not, things went awry. To see what often happened, focus in on MD and MS (old) in Figure II. Suppose that subsequent to an FOMC meeting, money demand by the public unexpectedly strengthened (MD shifts to MD'). Given the Fed's operating procedure, the bulge in money demand would at least initially be fully accommodated (point B in Figure II), and the money stock (M70-79) would overshoot the target.

Subsequently, the Fed would usually raise the federal funds rate, thus shifting MS (old) up vertically (reducing the growth rate of money). The problem was that the Fed could not bring itself to raise the interest rate by very much in the short run. Thus the rise in i permitted to occur over the short run (week to week and month to month) was typically quite small, leaving the money stock well above the target and the financial system close to the situation depicted by point B.

Under the new procedures, the FOMC selects a growth path for nonborrowed reserves it believes is consistent with achieving its monetary target (M*). Open-market operations are then used to produce the desired reserve path. If banks' total reserve demands (i.e., the demand for required reserves and excess reserves) are greater than the nonborrowed reserves provided by the Fed through open-market operations, the difference will have to come from the Fed's discount facility in the form of borrowed reserves.

The larger the gap between banks' total reserve demands and the Fed's supply of nonborrowed reserves, the higher will be the interest rate (the funds rate, in particular). Since banks' demand for borrowed reserves is directly related to the spread between the funds rate and the discount rate, a rising funds rate widens the spread, inducing more borrowing from the discount facility. Thus a gap between reserve demand and nonborrowed reserve supply will produce a rise in the funds rate and an accompanying rise in borrowed reserves.

All of this is captured in the money-supply function labeled MS (new) on Figure I. The upward slope mainly reflects the fact that a rise in the interest rate will induce banks to borrow more reserves from the discount facility, thus enabling them to supply more money to the public. The Fed's supply of nonborrowed reserves fixes the position of the function.

You should note immediately that if everything goes right, there is no real difference between the old and new procedures; the Fed will achieve M* and the interest rate will be i1 (point A in Figure I).

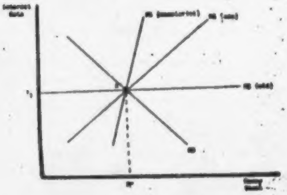

Figure I

The key distinction between the old and new procedures reveals itself in Figure II. If the demand for money shifts unexpectedly (MD to MD'), the funds rate (and other interest rates) will rise automatically (to i2). There is no need for policy-makers to gather together to decide on an "appropriate" adjustment of the funds rate. The rise in money demand will raise banks' reserve demands. Given an unchanging nonborrowed reserve path, the rise in reserve demands will bid up the funds rate and induce more borrowing at the discount window.

The money stock will still overrun the target (M79-82) but by considerably less than would have been the case under the old procedures (compare points B and C). In subsequent weeks, the Fed can, and indeed has, reduced the nonborrowed reserve path, shifting MS (new) to the left in an effort to push the money stock back toward the target (M*). In general, shifts in money demand produce larger and faster changes in the funds rate than occurred under the old procedures.

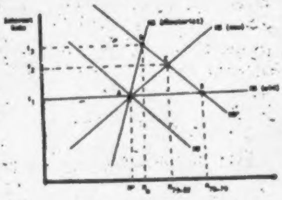

Figure II

Usually, monetarists make one of two closely-related arguments in criticizing the Fed's new procedures: Either things have not really changed all that much (as revealed by the continuing deviations of money growth from target) or the changes do not go far enough. As discussed on these pages and elsewhere count rate is a penalty rate, this avenue of adjustment (escape?) would be essentially closed.) The ramifications of the alternative structure of regulations and procedures preferred by the monetarists, in the face of an unexpected increase in money demand, are again shown in Figure II (point D). The interest rate would rise more (i3), but the money stock would overrun the target by less.
many times, most monetarists would recommend setting paths for the monetary base or total reserves instead of nonborrowed reserves, switching from lagged to contemporaneous reserve accounting, and instituting a penalty discount rate.

The expected net effect of these recommendations would be to steepen (make more inelastic) the money-supply function shown as MS (monetarist) in Figure I. (Remember that the positive slope of MS (new) mainly reflects banks' ability to borrow at the below-market discount rate. If the discount rate is a penalty rate, this avenue of adjustment (escape?) would be essentially closed.) The ramifications of the alternative structure of regulations and procedures preferred by the monetarists, in the face of an unexpected increase in money demand, are again shown in Figure II (point D). The interest rate would rise more (i3), but the money stock would overrun the target by less.

A reasonable approximation of the raison d'etre underlying the Fed's current policy approach is that the nonborrowed reserves strategy is a sensible compromise between the old and monetarist-type strategies, given uncertainty and the considerable volatility in the public's short-run demand for money.

Put another way, the Fed apparently believes that the old procedures allowed too much volatility of money (particularly on the upside), while the monetarist-type procedures would permit too much volatility of interest rates. Empirically, while the results of the new approach have been mixed at best, the change in procedures has been discernible: During the 1970s, when money growth accelerated (decelerated), the Fed allowed reserve growth to move proportionately in the same direction to moderate or postpone any rise (fall) in short-term rates. Since October 1979, accelerations (decelerations) of money growth have resulted in the Fed engineering a change in reserve growth in the opposite direction to moderate the deviation of money growth from target.

Many issues involved in the formulation and implementation of monetary policy deserve continuing analysis. Examples include: the choice of monetary targets, which monetary aggregate to focus on, the appropriate adjustment of reserve paths in the face of deviations of actual money growth from target, the structure and management of the discount facility, etc. However, for those unrelenting critics of the Fed, whether monetarists or Keynesian or otherwise, who seem to imply that making "better" monetary policy is relatively easy, I offer the following sober reflection of Henry C. Wallich, a member of the Federal Reserve Board: "The policy mistakes of academics are buried in dead storage files in some warehouse. The mistakes of policy-makers are republished monthly in the nation's major economic time series." ■

AMERICAN BANKER

MAY 20, 1981

Control Money before Cutting Taxes

By JOHN H. MAKIN
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The Wall Street Journal obviously has been caught short by the reaction in the bond markets to the new administration's economic package. Its chart of municipal bond yields only goes as high as 15%. In recent weeks that chart has taken on the look of a description of air conditioner sales during a winter heat wave.

There are two basic reasons for the sharp rise in interest rates since early April. The first and probably more fundamental reason is simply that the fixed-income markets are not yet convinced of the validity of the supply-side argument that tax cuts do not increase the probability of larger, future, federal budgetary deficits.

The second reason is fear that the Federal Reserve has yet to regain control of the money supply. From January 7th of this year until April 22nd M1B grew at an annual rate of 13.3%. This constitutes a sharp acceleration from the beginning of the year to a level well above the Fed's target range. The basic difficulty is that both of these reasons provide a basis for the argument that things will get worse before they get better in the fixed income markets. It's worthwhile to delve a little more deeply into the reasons for this perception.

The Tax Rate and the Tax Base

First consider the impact of the supply-side argument on deficits. The big question mark had to do with the level of federal receipts. Simply put, the level of receipts is the product of the average tax rate times aggregate economic activity, or the tax base. If the tax rate is cut and the tax base is unaffected, obviously receipts will fall. The supply-side argument is that the drop in tax rates will lead to an increase in activity. If this relationship does hold, it still does not guarantee an increase in receipts, given a cut in the tax rate. In fact, such an increase would require that, say, a 10% cut in the tax rate would lead to a more than 10% increase in the level of economic activity.

In view of the fact that we have relatively little empirical evidence on the responsiveness of economic activity to fax rate changes, a high degree of uncertainty is attached to estimates of the effect of tax rate cuts on overall tax revenues. Beside this, there is another aspect of the relationship between the tax rate and economic activity that troubles many analysts.

If one grants that cuts in the tax rate are indeed stimulative, it seems reasonable to expect that the impact of the stimulation will take some time to appear. That is, there may be a lagged relationship between tax rates and overall economic activity. If this is true, the initial effect of a cut in tax rates will be to reduce revenues because the hoped-for increase economic activity will not increase the tax base immediately. If after a time, the stimulative impact of tax cuts begins to be felt, revenues will begin to increase. Still, revenues will only exceed their pre-tax-cut levels if the percentage increase in economic activity is greater than the percentage reduction in the tax rate.

In effect, the possible lagged impact of tax-rate cuts on economic activity implies a J-curve of the trade balance in the wake of a devaluation. The initial effect is unambiguously negative because the cut in the tax rate takes hold immediately while the stimulative impact of the tax cut takes time to occur. This is why some analysts fear that the administration program will first lead to elevated deficits which, if accompanied by monetary stringency, will put extreme upward pressure on interest rates. Such extreme upward pressure could reduce the probability of ultimate success of the Administration's program because of the high degree of political pressure that high interest rates create.

Many observers would be much more comfortable with the notion of an initial cut in expenditures with tax rates held constant. This, along with the bracket creep that would produce a gradual increase in tax rates over say the first year of the program, would almost assure a reduction in the federal budgetary deficit. As a result, the probability that a program of deceleration and stabilization of money growth could succeed would be increased.

The bottom line is that while many observers do acknowledge the Administration argument about bracket creep, most think that if any stimulative effects on economic activity do follow from tax cuts, they do so with a lag. In view of this, the concern for an initial ballooning of a deficit, given a program of simultaneous expenditure and tax cuts, raises considerable fears about the near term prospects for the fixed income markets.

Monetary Control Still Absent

The second thing troubling the fixed income markets, an "unanticipated" acceleration of monetary growth, is unfortunately nothing new. The difficulty with this "more-of-the-same" scenario is that it increases the liklihood that a transition to a period of truly slower and more stable money growth will entail a paniful transition during which real interest rates are pushed up to a very high level by means of unanticipated restraints on the quantity of available liquidity.

Such high real interest rates are very likely to depress the level of economic activity and thereby increase the price which must be paid to bring inflation under control. Such episodes always lead to valid debates about the costs of controlling inflation which in turn tend to prolong the uncertainty regarding the ultimate outcome of the efforts in this direction.

There is a very good case to be made that the Reagan program of expenditure cuts, tax cuts, monetary restraint and regulatory reduction is what the economy needs. The concern is that administration of all four medicines at once might kill the patient. The program needs to be applied sequentially rather than simultaneously. Regulatory reduction can proceed as planned. So can expenditure cuts. The change required is recognition that

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evidence of monetary control, specifically achievement of lower and steadier money growth, must precede tax cuts in order to remove a strong possibility that a sharp, initial bulge in the deficit will make it harder, if not impossible, for the Fed to control money growth.

The changes proposed here could be initiated by changing one aspect of the Administration's proposal. The starting date for the tax cut proposal should be postponed to July 1, 1982. Its form and detail should be enacted into law as currently scheduled so that rational decision-makers can begin to incorporate its provisions into their behavior as soon as possible.

This minor change in the text of the tax bill would be the easy part of a switch from simultaneous to sequential application of the administration program. The hard part, in principle, would be achievement of money control before July 1, 1982. In practice, an adequate plan has been hammered out and discussed at some length in the American Banker and elsewhere by myself and Messrs. Solomon Sprinkel, Roos and Hamburger. While full agreement on details has by no means been achieved, some points seem obvious.

The Fed must end its policy of effectively allowing the behavior of the monetary base, and thereby the money supply, to be demand-determined. It should target on a single aggregate, preferably M1-B, by controlling either total reserves or the adjusted monetary base. This task, which would admittedly not be an easy one, could be made more manageable by moving to a floating penalty discount rate and ending lagged reserve accounting. There would undoubtedly be some unforeseen problems with such a program, but in view of the record of money supply behavior and interest rates over the past 18 months and the resultant concerns in financial markets, it does seem that the time has come to try a fundamentally different approach to monetary policy.

It would be very difficult to argue that financial markets are not troubled by current prospects for monetary and fiscal policy. The prices of fixed (dollar) income securities reflect the concern. Some of that concern might be allayed by achievement of some progress with monetary control before embraking upon an experiment with fiscal policy.

WHAT HAS GONE WRONG?

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There is obviously something wrong with Fed operating procedures. For most of the second quarter annual percentage growth rates for the monetary base, bank reserves, M1-A and M1-B were: 5.5, 0.8, -5.5 and -4.0 respectively. Comparable figures for the subsequent 3 months were 12.4, 13.9, 14.2 and 17.2. This awesome slow-fast sequence has created enough uncertainty in financial markets to drive interest rates back up, this time without the aid of credit controls, to levels comparable to those prevailing during the Civil War. It is disturbing to realize that in order to induce longer term lending, investors now require returns comparable to those required when the existence of the nation was in doubt in the midst of a civil war financed largely by printing money.

Damage From Failure to Stabilize Money Growth

Faced now with extreme volatility in financial markets it is important to remember the original aim of the Fed operating procedures adopted last October. Quite simply, the idea was that by not targeting interest rates, slower and more stable money growth would be possible. In turn, expected inflation would fall and stabilize thereby resulting in lower and more stable interest rates. Increased permissible flexibility of interest rates was to result after a transition period during which market participants accustomed themselves to the new procedures, in reduced actual volatility of rates.

The experience of fixed-income market participants with the new operating procedures has not increased their confidence in the ability of the Fed to control behavior of the money supply. The second quarter deceleration was dramatic enough to alter expectations of all but the most extreme bears. Market rates fell sharply reflecting this. The third quarter acceleration, which Chairman Volcker had ruled out in July testimony before Congress, has been dramatic enough to re-kindle speculation about responsiveness of Fed policy to presidential politics. Such speculation only adds to the harm done by the volatility in the monetary environment created by the burst of money growth during August and much of September. It threatens further the actual and perceived ability of the Fed to retain necessary independence from expedient, politically-oriented policies.

Recent monetary volatility represents a very unfortunate episode for the Fed for two reasons. It does not represent Fed intentions and it did not have to happen. It is preposterous to believe that anyone at the Fed would think that a dramatic burst of money growth beginning 90 days before an election would produce any concrete results, beyond turmoil in financial markets. And, contrary to the beliefs of some understandably frustrated market participants, the Fed does not consciously aim to destabilize markets.

Source of the Problem

The problem lies with current Fed operating procedures. The nature of the problem is such that it was exacerbated by the imposition and rapid removal of credit controls. Specifically, the discount rate should be tied to an index of short-term market interest rates. The need to do this has been expressed many times before and it is quite obvious. Still, since the discount rate remains pegged by Fed initiative, it is useful to reiterate the problem within the content of new operating procedures.

Briefly, the Fed achieves a money target by operating on bank reserves and keeping track of multipliers. But bank reserves consist of borrowed reserves, adjusted at the initiative of banks, and unborrowed reserves. The Fed operates directly on unborrowed reserves to achieve a reserve target. This procedure requires assuming, as the Fed does, a current level of bank borrowing about equal to that which prevailed in the most recent period. In effect, last period's borrowing is taken to be the best predictor of this period's borrowing. Technically, this amounts to viewing the path of borrowing as a random walk.

In actual practice banks decide on borrowing at the discount window by comparing the discount rate with expected market interest rates. When expected market rates are falling relative to the discount rate, banks foresee less loan demand, less need for liquidity and therefore reduce borrowing at the discount window. Conversely, a rise in expected market rates relative to the discount rate leads to increased borrowing. Banks compare expected market rates with the discount rate since, say, when liquidity demand appears to be rising, they wish to build up borrowing gradually in anticipation of loan demand rather than try to borrow heavily after loan demand has risen and the probability of a discount rate rise is enhanced.

This description is consistent with recent events. During the second quarter market rates fell very rapidly, far more rapidly than the discount rate which was steady at 13 percent until late May. The Federal Funds rate fell from over 19 percent early in April to below 10 percent late in May. As a result, expected market rates fell dramatically relative to the discount rate and bank borrowing fell dramatically from about a $2.5 billion level in April to about $1.0 billion in the last half of May. Meanwhile, each week the assumption that bank borrowing from the Fed would be at or close to the level of the previous week resulted in a level of unborrowed reserves too small to achieve desired total reserves. Smaller total reserves resulted in a drop in the money supply.

The shock which set this process in motion was imposition of credit controls in March. Controls meant interest rates of infinity for the many potential borrowers shut out by quantitative limits on extensions of bank credit. Real economic activity dropped and so did demand for bank loans and banks' expectations about market interest rates. Removal of controls provided a quick stimulus to economic activity. The process just described was reversed as expected market interest rates rose during the summer relative to the (falling) discount rate. Bank borrowing rose sharply during July, fell briefly early in August, and rose again into September. The money stock essentially mirrored these moves. Again the reason lay with ignoring the link between desired bank borrowing from the Fed and the (now rising) gap between expected market rates and the discount rate. The assumption that borrowing would conform closely to that of previous weeks produced too high a level of unborrowed reserves since borrowing actually went up sharply. As a result, total reserves, the base and the money supply rose more rapidly than intended.

Solving the Problem

The pegged discount rate means that every event which affects expected market interest rates effectively alters the stance of monetary policy. An event which elevates expected market rates effectively "eases" policy under a given discount rate and conversely. The Fed is constantly placed in the difficult position of deciding whether an event which has altered the market's perception of the equilibrium interest rate is transitory and best ignored or permanent and requiring a change in the discount rate.

If alternatively the discount rate is simply pegged to some short-term market rate, perhaps at a level 50 basis points above the federal funds rate, or at a level which is above the funds rate by a given percentage margin, this problem disappears. Member bank borrowing becomes far more predictable since the margin between the cost of funds at the discount window and the return on those funds is constant. Consideration could be given to alternative margins (positive, zero or negative). The important thing would be to hold the margin constant.

[The control process would also be aided by discontinuation of lagged reserve accounting, but alteration of discount rate policy is more crucial to improve control over the monetary base and, ultimately, the money supply].

Solution Should Not Be Delayed

It is likely that the extreme volatility of the monetary aggregates associated with the credit controls episode is largely behind us. Pressure for a change in operating procedures may lessen. Failure to act now would, however, be a serious mistake. The next large exogenous shock, whatever it may be, which significantly alters the outlook for loan demand will re-introduce volatility.

Imposition and removal of credit controls has exacted a heavy price in terms of volatility in credit markets and real economic activity as well as in terms of Fed credibility. If this is the price to be paid for revealing a flaw in Fed operating procedure that is soon corrected, then we will have at least gained something very valuable from this costly episode. If the lesson is ignored, future changes in demand for credit will induce monetary instability that further erodes confidence in the Fed. Financial markets and the real economic activity they support will suffer badly. So too may the degree of independence permitted for the Federal Reserve System.

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Enhancing Monetary Stability

By JOHN H. MAKIN
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There is no doubt that some progress has been made in achieving the Federal Reserve Board's goal of lowering and stabilizing money growth rates. Still, significant, unanticipated week-to-week changes in the money supply continue to result in interest-rate volatility.

It has been two and a half years since the Fed moved from funds targeting to reserve targeting, and the time has come to make some modifications in Fed procedures. Basically, there is a need to de-sensitize markets to money-supply announcements.

The magnitude of the problem, whereby interest rates have become more responsive to unanticipated weekly changes in the money supply, is spelled out in a recent paper by Vance Roley in the Federal Reserve Bank of Kansas City Review. Mr. Roley estimates that a $1 billion surprise in a weekly money-supply number can — between 3:30 p.m., before announcement, and 5 p.m., after announcement — move the yield on short-term securities by seven basis points.

Since such surprises are not unusual, and are often considerably larger, it is not surprising that interest rates have continued to be volatile under the new operating procedure.

Results such as Mr. Roley's would not indicate a problem if precise monetary control were possible week by week. However, it is clear from extensive study by Board staff and by its outside critics that currently available techniques are inadequate consistently to keep money growth within a prespecified target range, such as the 2.5% to 5.5% currently specified for M1.

The solution to these problems is to move to a new reporting schedule which more realistically reflects the ability of the system to hit targets and provide adequate information for those in the marketplace.

Specifically, monetary aggregates should be reported once a month, with a possibility of moving later to quarterly reports.

Second, the report should focus on the per cent change over the figure from the previous year. That is, the December number should be the per cent increase over the previous December and not the November-December change annualized. This procedure would have the effect generally of reducing the volatility of the reported numbers and would also be more realistic in terms of the targets of the Fed.

A change in the way the Fed states its money-growth goals would complement less frequent reporting of the aggregates. Instead of stating annual targets for money-supply growth, the Fed should move to a quarterly horizon. The procedure might involve preparing a quarterly forecast of money-supply behavior that would be consistent with a desired growth rate of nominal gross national product.

Indicating the desired rate of money growth at the beginning of the quarter as a forecast gives a more realistic view of the state of technology with regard to ability to make the money supply grow at desired rates, and the quarterly format gives the Fed considerably more flexibility for interim changes in course.

Naturally, the increased flexibility could be abused and lead to a gradual move toward higher money growth rates, but it need not if the Fed remains committed to the fundamental goal of lowering and stabilizing money growth and is not subject to heavy political pressure to deviate from that path.

Of course, critics would point out that only reporting money-supply numbers monthly would amount to suppression of available information if the Fed actually collects numbers weekly.

The Fed's reply to such critics is that it does not pay much attention to week-to-week numbers anyway. The best way for the Fed to diffuse criticism would be to demonstrate its indifference to weekly numbers simply by not collecting them at all.

This change in procedure would, of course, require some change in the procedures employed to calculate reserve requirements for member banks. But such a technical problem should not prevent a move to an improved reporting schedule. Required reserves could easily be calculated on average deposits over a monthly period, as is currently done in Japan.

An additional benefit could result from changing the reporting interval. Since such a change would reduce considerably the reporting burden on member banks, it would be an appropriate time to move from lagged to contemporaneous reserve accounting.

This change would remove another source of monetary instability and, coupled with adoption of a market-linked discount rate, would make it easier for the Fed to hit its targets. The combination would go a long way toward reducing perceived volatility of money growth and thereby toward stabilizing interest rates.

Effects of Altered Reporting Schedule

There is nothing very radical in any of these proposals. They are all currently being employed by the Bank of Japan.

Quite simply, the Bank of Japan emphasizes the least variable aspects of reported money-supply numbers, while the Federal Reserve System under its current procedures emphasizes the most variable aspects.

The actual variability of money growth in Japan on a quarterly basis is almost twice that of the United States. At the same time, Japanese monetary policy, largely adapted from procedures pioneered by the Fed, is actually administered in a way that projects an image of stability and determination more effectively than does Federal Reserve policy.

Further, the performance of the Japanese economy has not been adversely affected. Through August 1981, the annual inflation rate in Japan was 3.7%, while real GNP growth was about 4%.

It is important to remember that the changes being suggested here do not amount to a reduction in the information available to financial markets. Rather, the changes represent an attempt to have the Fed report money-supply numbers at intervals during which it is realistic to expect that some good information about the path of the money supply will materialize and at intervals over which it is technologically feasible to come close to hitting targets.

It is also important to remember that the response to unanticipated changes in the money supply detected by Mr. Roley has been sharply increased since October 1979. This is because the market perceives that the Fed is taking its targets far more seriously, so that if the money supply goes above target, the market anticipates a sharp reversal in the actual movement of the aggregates. As a result, interest rates rise.

Unfortunately, while the market has perceived the Fed to be more sensitive to surprise movements in money, those movements have grown considerably larger. As compared to the period from 1973 through October 1979, both the mean and the standard deviation of unanticipated movements in the monetary aggregates have more than doubled.

Viewed in this way, increased volatility of interest rates since October 1979 stems from unanticipated money movements having been larger and more volatile than previously, and the Fed's response to such movements has been sharper.

Monthly reporting of year-over-year per cent changes in the money supply would, given that the Fed remains committed to essentially low and stable money growth, result in smaller and less volatile money movements and therefore more stable interest rates.

THE WALL STREET JOURNAL, THURSDAY, JULY 29, 1982

The Results of the Fed's Failed Experiment

By Allan H. Meltzer

The Federal Reserve's experiment with monetary control is a failure. Since the experiment began in October 1979 the volatility of money growth, short-term interest rates, long-term interest rates and exchange rates has been raised beyond previous levels and more than necessary. This indicates that something is wrong. Risk is excessive.

The failure isn't total. Money growth has been reduced and inflation cut in half. But the cost of reducing inflation is much greater than necessary. That cost is a direct result of the Fed's failure to adopt procedures that control money growth effectively. This failure imposes an excess burden on the economy by raising interest rates and slowing the recovery.

Many congressmen and probably much of the public blame the budget deficit and the Fed for high interest rates. They propose faster money growth to finance more of the deficit, bring interest rates down, increase spending and reduce unemployment.

The blame is correctly placed, but the remedy is wrong. The deficit contributes to higher interest rates but can't explain why interest rates fell in May, rose in June and fell in July. The explanation of these movements lies mainly in changing perceptions about past and future money growth.

The Fed dismisses highly variable money growth as a statistical quirk. It claims that innovations have made M1 a less reliable measure of money. We heard last year that innovations and shifts in money demand justified a big drop in money growth. A few weeks ago the Fed said the opposite: Innovations justify faster money growth. These statements add to the uncertainty about the future policy course. And because there is uncertainty about money growth, forecasts of deficits, inflation, interest rates and economic activity are also uncertain.

Uncertainty and skepticism keep interest rates high. No one is forecasting that inflation will return to the double-digit range this year. Commodity prices, reported rates of inflation and wage agreements show that inflation has subsided and that people are willing to sign contracts in the belief that inflation won't be much above near-term forecasts of 6% to 7%. Periodic surveys show that buyers and sellers of bonds express similar beliefs about the inflation rate they expect for the next 10 years. The shared belief is 6% and 7% inflation. The future markets in bonds and Treasury bills tell a compatible story.

Announcement Shocked Markets

If buyers and sellers of bonds agree that the average expected rate of inflation is 6% to 7%, why is the prime rate 15.5% and the recent rate on long-term government bonds about 13% to 14%? "Real" yields of 7% to 9% seem extraordinary. Taxes cannot explain the current level of interest rates. High grade, long-term tax-exempt bonds currently yield about 6% more than the average expected rate of inflation.

September 1979 was the last full month before the Federal Reserve began its experiment. The average interest rates on long-term tax-exempt bonds was then 6.5% and on long-term government bonds, 8.7%. Despite the then higher expected rate of inflation and the weak dollar that led the Fed to change procedures, long-term interest rates were five to six percentage points lower than current rates, and the prime was three points lower.

The Oct. 6 announcement shocked the markets. Interest rates rose. Within six months long-term rates were about three points higher than before the change. These rates haven't returned to pre-announcement levels despite lower inflation and lower expected inflation.

A study of short- and long-term interest rates by the Treasury staff concludes that following the October 1979 change in procedures, uncertainty about monetary growth increased. The study estimates that increased uncertainty adds two to three percentage points to current interest rates at all maturities. Further, the study suggests, uncertainty about monetary growth can be reduced below the level existing before October 1979 by improving the reliability of monetary-control procedures.

More reliable monetary control is not the only way to reduce interest rates. Lower expected inflation would lower interest rates. Smaller budget deficits in the U.S. and elsewhere would lower interest rates. Increased variability of the demand for money—the factor most often cited by the Fed—contributes about ½% to ¾% to the rise in interest since September 1979, according to the Treasury study. Quick changes aren't likely in any of these areas. The best way to lower interest rates near-term is to reduce uncertainty by lowering the variability of money growth while reducing the average rate of money growth gradually but persistently. More reliable monetary control would make it possible for everyone to see that the Fed isn't returning to a more inflationary path.

The markets see the extraordinary deficits that must be financed in the next six months, and they wonder how well the Fed's faulty control system will respond.

Many people acknowledge the effects of uncertainty and variability on long-term rates but doubt that uncertainty about money growth can explain the rise in real short-term rates—short-term rates adjusted for inflation. Recently rates on three-month Treasury bills have been three or four points higher, while expected and actual inflation is lower than in September 1979. A valid explanation of current interest rates must be consistent with the increased real holding period returns on three-month Treasury bills and the persistence of higher real returns since October 1979.

Enter uncertainty about money growth. The Federal Reserve's current operating procedures limit the Fed's ability to control money. When increased demands to borrow, by government or private borrowers, press short-term interest upward, the monetary base—total reserves and money—increase. These increases create a bulge in money growth. Quarterly Social Security payments also increase monetary aggregates under current operating procedures. To remove bulges in reserves and money, the Fed raises short-term rates. If the bulge is removed promptly, or is expected to be removed, long rates don't change. Long-term rates may even decline as they did in May, following the April bulge in money. Let the bulge persist, or grow, and doubts about the persistence of disinflationary Fed policy increase, as in February and June.

Small changes in expected inflation cause large capital gains or losses to bond holders. Suppose the bulge in money growth remains for a month or a quarter. If the expected future rate of inflation stays in the 6% to 7% range, but rises from the lower to the higher level, owners of long-term bonds experience an immediate loss of 7% in the market value of their bonds. Speculators who bought bonds hoping to share in the capital gains experience large short-term losses.

Losses of this kind are not hypothetical. They are the repeated experience of bondholders. No one should be surprised that those who bear this risk demand compensation. The increase in risk premiums since 1979 is one of the costs of the increased uncertainty about monetary growth caused by the diminished credibility of the Federal Reserve and the excessive variability of money growth under current procedures.

Faced with the large risk premiums in long-term interest rates demanded by lenders, many borrowers shift to the short-term market. The borrowers, too, know that if current, extraordinary risk premiums decline, interest rates will fall by several percentage points without any further decline in expected inflation. Borrowers accept the risk that short-term rates may be higher at the next renewal of their loan to avoid paying current long-term real rates and extraordinary risk premiums for 10 or 20 years.

The key elements in the explanation are the persistent demand for short-term credit or borrowing, the large risk premium in long-term interest rates and the persistent bulges in money growth that increase uncertainty about monetary policy. It is the persistent demand for short-term credit, the common, shared expectations of borrowers and lenders and excessive variability of money growth that keep short-term rates close to after-tax, real holding period returns on long-term bonds.

Borrowers are willing to borrow at short-term rates that leave them indifferent between issuing long-term bonds or a series of short-term loans renewed periodically. They borrow in the short-term market until the real cost of short-term loans and long-term bonds are about equal. Since expectations about near- and long-term inflation are similar, (risk-adjusted) market interest rates on short- and long-term securities are driven close to equality also. The yield curve remains relatively flat.

Equalization of (risk-adjusted) holding period returns (and costs) puts the shadow of the risk premium into short-term rates. The borrower is indifferent between extending maturity of his debt now or waiting for the risk premium to decline. The current risk premium compensates the lender for the risk of capital losses on long-term debt. By lending short, he reduces his risk but he also reduces the chance of capital gains if the risk premium returns to its customary value.

This explanation of short- and long-term interest rates is consistent with several atypical features of recent experience. Here are some examples:

- Interest rates and reported quarterly or semi-annual growth rates of money, reserves and the monetary base now rise and fall together.
- The usual cyclical pattern is for short-term rates to fall below long-term rates. This year short and long rates changed frequently but changes were often in the same direction and about the same magnitude.
- The typical corporate refunding of short-term into long-term debt has not occurred in this recession.
- Foreigners perceive that many of the changes in short-term rates are changes in real rates, so the dollar appreciates when short rates rise and depreciates when short rates fall.

Markets are nervous and participants uncertain. They see the extraordinary government deficits that must be financed in the next six months. They wonder how well the Fed's faulty control system will respond. They hear a growing number of voices calling for faster money growth, rumors about credit controls and bankruptcies and predictions of another recession or higher inflation.

If the Federal Reserve returns to high money growth, long-term rates will rise above short-term rates. The familiar pattern, found in most recessions, will return. Long-term rates will reflect the increase in expected future inflation. Borrowers and lenders will recognize that disinflation is over and higher inflation lies ahead. The Fed may make that mistake, as it did in the fall of 1980. Or, it may make the opposite mistake, as it did last summer. No one knows.

Credible Policy Is Needed

The easiest way to reduce interest rates and encourage expansion with declining inflation is for the Fed to increase its credibility by sticking to an announced policy of disinflation and improving its procedures. As the credibility of monetary policy increases, risk premiums and interest rates will decline. Short-term bulges in money growth won't be expected to persist, so they'll have smaller effect. This is the experience of Switzerland, where money growth is variable but policy is credible. In Britain, despite a war and a current rate of inflation above ours, interest rates on long-term debt declined this year. The increased credibility of British government policy statements is a main difference between this year and last.

The Fed has an unusual opportunity to break the current impasse by gradually lowering the growth of money—to reduce inflation—and lowering the variability of money growth to reduce the risk premium in interest rates and encourage recovery. The procedural steps are well-known and can be adopted whenever the Fed decides to do so. One such step, the move to contemporaneous reserve accounting, has, at last, been proposed but not implemented.

The next step is to recognize the obvious. Current monetary procedures are unreliable and costly. They impose an excessive burden on the economy. These procedures should be abandoned. Instead of targets for M1 and M2, the Federal Reserve should announce a disinflationary path for the growth of its own assets and liabilities. It should remove the remaining self-imposed restrictions and faulty seasonal adjustments that make monetary control more difficult and less reliable. A growth path for Federal Reserve assets and liabilities means that the growth rate of either total reserves or the monetary base (total reserves plus currency) becomes the target. Either of these targets is difficult to miss, so control would improve, credibility would increase and risk premiums would gradually return to normal levels.

To reduce the cost of ending inflation, the Fed must match its procedures to its policies, its deeds to its words. Proper monetary control is not a panacea, but it can help to lower interest rates in the difficult months ahead.

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In response to your letter of 5 August

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I am enclosing the first chapter of my

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THE UNSETTLED STATE OF MACROECONOMICS

Jerome L. Stein

This is Chapter One of Monetarist, Keynesian and the New Classical Economics, Basil Blackwell, Oxford, 1982.

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Preface

The paradox of "stagflation," which was first noted at the beginning of the 1970's, undermined my confidence in the dominant Keynesian economics. With the aid of a fellowship from the John Simon Guggenheim Foundation, I attempted to formulate a dynamic macroeconomic theory which could explain the paradoxical empirical phenomena. This research was published in an article "Unemployment, Inflation and Monetarism," American Economic Review, 1974. A conference was held at Brown University in 1974 to evaluate the "Monetarist" propositions. This conference, supported by the National Science Foundation, resulted in a book, J.L. Stein (ed.), Monetarism (North-Holland, 1976).

In my 1974 article I noted (p. 884, note 17) that: if there is no forecast error between the actual and anticipated rates of inflation, then the trajectory of the unemployment rate is independent of monetary policy. Since this scenario seemed to be inconsistent with the message in Milton Friedman and Anna Schwartz, A Monetary History of the United States, I did not pursue the implications of that assumption. The New Classical Economics developed the implications of the joint assumptions: the forecast error is just "noise" and there is a "natural" rate of unemployment. This school of thought rejected Keynesian economics completely. By 1980, economists were polarized between the Keynesian analysis and the New Classical Economics. Each school of thought has its own vocabulary, techniques of analysis, statistical tests and oral tradition. Communication between the poles is almost non-existent; and very few macroeconomists are non-aligned.

As I continued to analyze the problems of stagflation and growth dynamics, in a series of papers with Ettore F. Infante of the Division of Applied Mathematics at Brown University (published in the Journal of Monetary Economics and the Journal of Political Economy), and as a result of my statistical testing of alternative hypotheses, I was convinced that neither pole was able to explain the empirical reality. Research was directed to refining the techniques of each school rather than towards the development of a theory which could predict.

William Baumol, as President of the American Economic Association, asked me to organize a session and present a paper at the 1980 Denver meetings of the American Economic Association on the topic: the Monetarist Contribution to Macroeconomics. It provided me with an incentive to evaluate the validity of the polar points of view and to continue my research on a synthesis which could explain and predict. The resulting paper, with the title of this book, was published in the American Economic Review, 1981.

Basil Blackwell, Oxford, asked me to write a book on this subject. By then, "a fire was burning in my bones"; and it was an offer that I could not refuse.

Drafts of the chapters were distributed to my graduate seminar at Brown University; and the students were asked to critize them from the viewpoint of both poles, point out deficiencies and to suggest revisions. Much have I learned from my teachers, in particular James Tobin; but most of all I have learned from my students: David Altig, Sung Yeon Lee, Dean Leistikow, Kazuo Mino, Richard Nisenson, Robert Selvaggio, Shunichi Tsutsui and John Van Huyck. Their trenchant criticims and suggestions were embodied in subsequent drafts. Richard Ablin, George Borts, William Haraf, Thomas Mayer and Zalman Shiffer also made excellent suggestions for improvement.

Parallel with my research in macroeconomics, I have been studying speculative markets. This research has been supported by the National Science Foundation and the Columbia University, Center for the Study of Futures Markets. This research has given me a more profound understanding of the formation of anticipations, which is of great importance in macroeconomics.

Marion A. Wathey typed this manuscript with the flawless grace and perfection that she also displays in her ballroom dancing. My wife Hadassah has given me excellent suggestions on editorial matters; and I have benefitted from her wise counsel. Brown University has provided me with ideal conditions for research. I am grateful to each one.

This is a controversial book in a polarized field. I hope that the reader accepts the philosophy quoted at the very end of this book.

Jerome L. Stein

Providence, Rhode Island
February, 1982

MONETARIST, KEYNESIAN AND THE NEW CLASSICAL ECONOMICS

Jerome L. Stein

CHAPTER ONE

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CHAPTER ONE

THE UNSETTLED STATE OF MACROECONOMICS

I. The Success of, and Subsequent Disenchantment with, Keynesian Economics

Among the casualties of the Viet Nam war was the state of macroeconomics. In 1969 Arthur Okun, who was Lyndon Johnson's Chairman of the Council of Economic Advisers, wrote a panegyric on Keynesian economics as a guide to economic policy. "More vigorous and more consistent application of the tools of economic policy contributed to the obsolescence of the business cycle pattern and refutation of the stagnation myths" (1970, p. 37). The innovative strategy of Keynesian economics focused upon the "Okun Gap" between potential (capacity) output and actual output[1] rather than upon the state of the business cycle, because even at the peak of the cycle in 1960 the economy was far short of full employment. Insofar as an Okun Gap exists, the economy is not realizing its potential; and it is the responsibility of the government to implement demand management policies to eliminate the Okun Gap.

Adoption of this strategy led to an activist stabilization policy which "... was the key that unlocked the door to the subsequent expansion in the 1960's" (*op. cit.*, p. 43). Early in the 1960's the problem was diagnosed as follows. Insufficient aggregate demand produced a gap between potential output and actual output. According to Keynesian theory, the obvious remedy was to implement a stimulative fiscal and monetary policy.

This orientation was widely shared by the economics profession, regardless of political persuasion. Arthur Burns, who was Dwight Eisenhower's Chairman of the Council of Economic Advisers, accepted Okun's Keynesian point of view. Burns wrote:

> "... the vital matter is whether a gap exists between actual and potential output; that fiscal deficits and monetary tools need to be used to promote expansion when a gap exists; and that the stimuli should be sufficient to close the gap-provided significant inflationary pressures are not whipped up in the process" (quoted in Okun, 1970, p. 43).

Keynesians acknowledged that they did not have a satisfactory solution to the problem of how to manage a full employment economy without inflation. In 1968, the economics profession generally believed that there were no difficulties involved in prescribing expansionary policies in a period of slack. (See Ackley, quoted by Okun, p. 61.) A decade later, a substantial number of economists subscribing to the New Classical Economics (NCE) totally rejected the premises and implications of Keynesian economics concerning the efficacy of demand management policy to influence the gap between potential and actual output.

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[1] The Okun Gap is $[(q(t)/y(t)) - 1]$, where $q(t)$ is "capacity output" and $y(t)$ is actual output.

Demand management policy in the 1960's was activated by an Okun Gap, and it consisted of an expansionary fiscal policy relying on tax cuts, coupled with an accommodative monetary policy.[1] Okun described the accommodative monetary policy.

> "The Federal Reserve allowed the demands for liquidity and credit generated by a rapidly expanding economy to be met at stable interest rates .... long-term yields were far more stable in the early sixties than in the late fifties. While the Federal Reserve obviously did not 'peg' bond yields, it did aim to stabilize longer-term interest rates" (1970, p. 53).

To ensure that the rationale of the policy was understood, Okun described it explicitly in terms of the dominant IS-LM Keynesian model.

> "An accommodative or rate-oriented monetary policy fixes the interest rate and makes the LM curve horizontal in the relevant range. There is no dispute among economists that a permanent tax cut (or an increase in most types of government expenditure) shifts the IS curve. Given a horizontal LM curve, a shift in the IS curve necessarily changes the level of income.... Whether the Fed should pursue a rate-oriented policy that produces a horizontal LM curve is not the issue. The fact is that it did in 1963, 1964, and the first half of 1965" (Okun, p. 57, note 30).

There was little doubt among the macroeconomists of the time that this "activist strategy was the key that unlocked the door to sustained expansion in the 1960's." The unemployment rate was reduced from 6.7% in

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[1] The prescription offered by the advocates of supply side economics in 1981 was to cut tax rates without raising the rate of growth of the money supply. See Robert Weintraub, 1981. Whereas Okun advocated policies to raise the ratio of actual to capacity output, "supply siders" aim to raise capacity output.

1961 to 4.5% in 1965. The growth rate of real GNP from 1961 to 1965 was 5.3% p.a., which exceeded the trend rate of growth estimated at 3.9% p.a. During the 1961-65 period, the rate of inflation of the GNP deflator was 1.8% p.a. Okun noted that: "Labor costs were remarkably stable in both organized and unorganized areas" (p. 49). Nominal unit labor costs rose at an insignificant rate of 0.5% p.a. during the period 1961-65.

This was the triumph and vindication of the New Economics. The spirit of Keynes was now

> "... scattered among a hundred cities.
> And wholly given over to unfamiliar
> affections."

Keynesian economics, which has guided demand management policy, is summarized by a few propositions [K1] through [K6].

[K1] "... prices and wages respond slowly to excess demand or supply, especially slowly to excess supply. Over a long short run, ups and downs of demand register in output; they are far from completely absorbed in prices" (Tobin, 1977, p. 459).

"A Keynesian interpretation is that prices--including money wages--are sticky in the short run, throughout those large sectors of modern economies where they are set by discrete private or public administrative decisions or negotiations."

"... the speed at which prices and wages increase relative to trend depends inversely on the amounts of excess supply (of labor, commodity stocks, capital capacity) in the economy" (Tobin, 1980, p. 38).

[K2] The unemployment rate is a good, but imperfect, barometer of the pressure of aggregate demand on the productive resources of the economy.

[K3] "In an economy with under employment of labor and capital, more labor and capital services will be supplied, if demanded, along the on-going path of wages and prices, without accelerating their increase" (Tobin, 1977, p. 464).

[K4] Cyclical movements of output and price, relative to their trends are positively correlated (Tobin, 1980, p. 38).

> [K5] "Keynes suggested ... that it was easier to stabilize real economic variables by moving aggregate money demand to a given path of money wages than by moving wages relative to a given money demand..." (Tobin, 1977, p. 460).

These fundamental Keynesian propositions are formally described by the following equations of the Keynesian system. Equation (1) states that the price level p is a relatively fixed multiple k of nominal unit labor costs W.

$$p = kW. \tag{1}$$

This equation is consistent with competitive pricing, where price is equal to marginal cost, or with imperfect competition when the elasticity of demand is relatively constant.

Equation (2) defines nominal income Y as the product of real output y and the price deflator p. Alternatively, the price deflator p is defined as the ratio of nominal to real output.

$$Y \equiv py. \tag{2}$$

The third equation is the IS-LM solution for nominal income Y. Nominal income depends upon nominal government expenditures G, nominal money stock M, nominal interest payments on the government debt B and tax rate τ.

$$Y = F(G,M,B,\tau). \tag{3}$$

Function $F(\cdot)$ is homogeneous of degree one in all nominal variables. If G, M and B change by $x\%$, then Y also changes by $x\%$. It follows that real output y depends upon the values of G, M and B measured in wage units, as described by equation (4a). It is written more simply as equation (4), where the subscript W indicates that the variable is measured in wage units.

$$y = \frac{1}{k} F(G/W,\ M/W,\ B/W,\ \tau). \tag{4a}$$

$$y = f(G_w,\ M_w,\ B_w,\ \tau). \tag{4}$$

A crucial Keynesian proposition [K1] is "... that prices--including money wages--are sticky in the short run ... price and wage increases relative to trend depend inversely upon excess supply of labor, commodities...."

The unemployment rate $U(t)$ is negatively related to the ratio of actual output $y(t)$ to capacity output $q(t)$. Therefore, the deviation of $U(t)$ from the equilibrium unemployment rate U_e and the Okun Gap $1 - y(t)/q(t)$ can be used interchangeably. A Keynesian proposition concerning the movement of unit labor costs is described by equation (5), which is based upon the following view.

> "... the historical experience clearly supports the proposition that there exists some critical rate of unemployment such that, as long as unemployment does not fall below it, inflation can be expected to decline..." (Modigliani and Papademos, 1976, p. 4).

Let the rate of inflation ω of unit labor costs W be defined by: $\omega \equiv D \ln W$. The Keynesian view is that the acceleration of the inflation of nominal unit labor costs depends upon the ratio of actual to capacity output.

$$(5) \qquad D \ln \omega = D^2 \ln W = H(y/q); \qquad D \equiv d/dt.$$

As long as there is an Okun Gap (i.e., y/q is less than unity), then the first three Keynesian propositions state that nominal unit labor costs and prices will not grow faster than trend. In particular, when there is an Okun Gap $(y < q)$, nominal wages and prices are often regarded as being fixed at the trend. Keynesians do not specify in any theoretical way what is this trend rate.

Demand management policy to eliminate an Okun Gap consists of: (i) raising government expenditures G or lowering tax rates τ and (ii) following an accommodative monetary policy to stabilize the nominal rate of interest, by letting the money supply M grow with the expansion of the economy as described by equation (6).

$$(6) \qquad M = M(y).$$

As Modigliani phrased it:

[K6] "In the initial phase of the recovery, the target should be the maintenance of current rates ... [of interest]" (Modigliani and Papademos, 1975, p. 165).

"... our policy target is stated in terms of interest rates, not in terms of money supply. The interest rate target can be enforced by the Federal Reserve directly without any need to decide in advance what growth rate in the money supply or in reserves will be required to achieve it" (Modigliani and Papademos, 1976, p. 17).

Combining equations (4) and (6), or propositions [K1] - [K6], the Keynesian demand management policy to be followed when there is an Okun Gap $(y < q)$ is based upon equation (7).

$$q > y = f(G_w, M(y), B_w, \tau). \quad (7)$$

Declines in tax rates, or increases in government expenditures, produce a rightward shift of the IS curve along a relatively horizontal LM curve. Output then rises, the Okun Gap is reduced; and very little of the increased demand is dissipated in price and wage increases.

Keynesian economics, which dominated academic macroeconomics in the 1960's, demonstrated to Congress and the public its ability to eliminate the gap between potential and actual output. A sustained expansion was engineered in the 1960's without any significant inflation.

All of this was changed in the decade of the 1970's. In the aftermath of the Viet Nam war, the Keynesian propositions no longer characterized the state of macroeconomic theory. Table 1 summarizes the events which were inconsistent with the Keynesian propositions and model described above.

Table 1

Growth, Unemployment and Inflation 1961-80

Period	Price Inflation π % p.a. (1)	Labor Cost Inflation ω % p.a. (2)	Average Unemployment U % (3)	Growth Rate of Real Output G(y) % p.a. (4)
1961-68	2.5	1.9	4.85	4.9
1968-73	5.1	4.8	4.75	3.5
1973-80	7.7	8.4	6.58	2.4
1961-80	5.1	5.0	5.57	3.6

Source: Columns (1), (2), (4), Federal Reserve Bank of St. Louis, Annual U.S. Economic Data, May, 1981; Column (3), Economic Report of the President, Council of Economic Advisers.

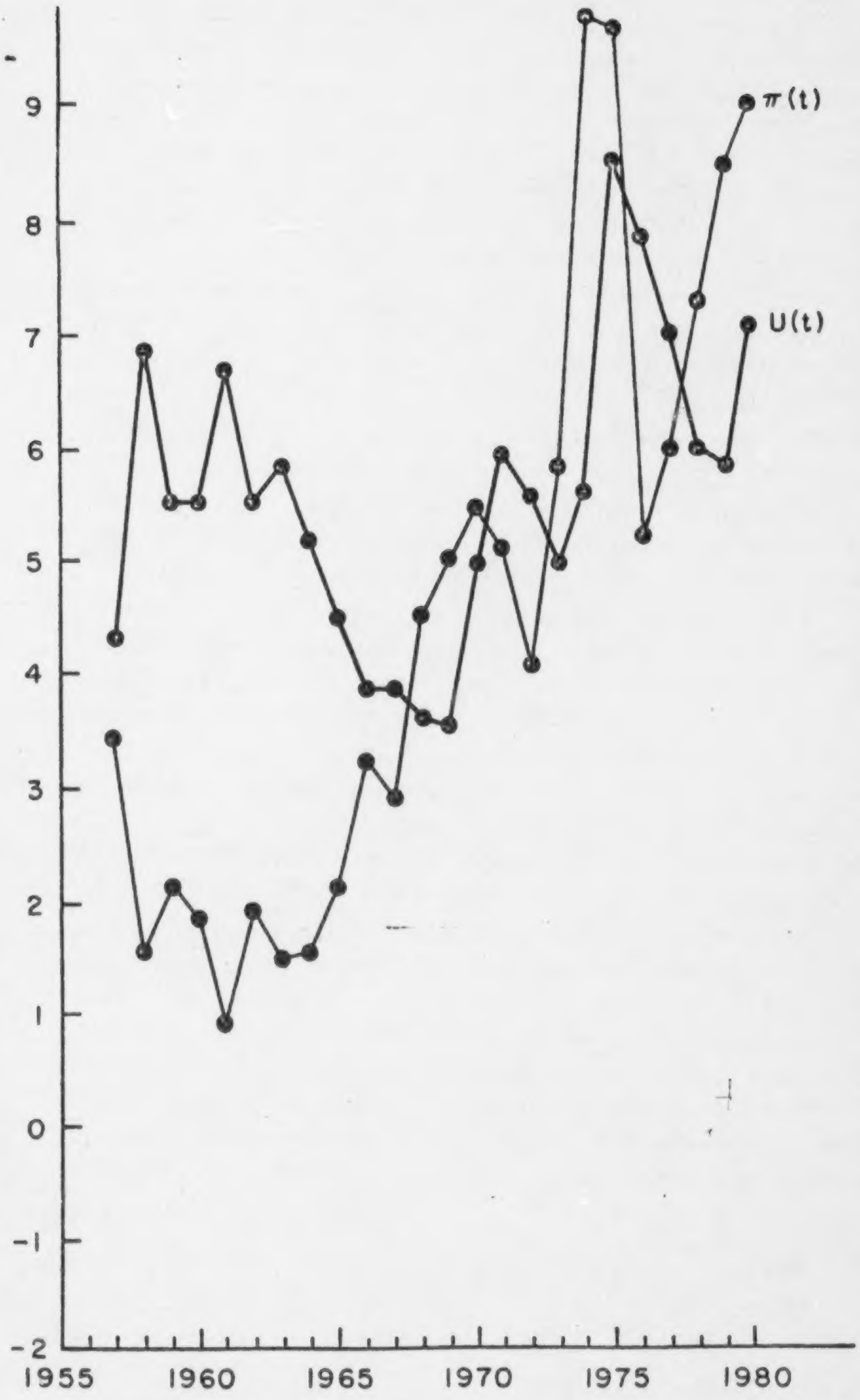
This table covers the period 1961 through 1980, and is divided into three subperiods. Period 1961-68 is the triumph of Keynesian economics. Period 1968-73 is the Viet Nam war period, prior to the "oil shock." Period 1973-80 contains the "oil shock" and the subsequent developments. Column 1 is the average annual compound rate of inflation π of the GNP deflator, measured in percent per annum. Column 2 is the average annual compound rate of inflation ω of nominal unit labor costs, measured in percent per annum. Column 3 is the average unemployment rate U during the subperiod, measured as a percent. Column 4 is the average annual compound rate of growth of real GNP, denoted by $G(y)$, during the period, measured as a percent per annum.

The phenomenon of "stagflation" characterized the periods 1968-73 and 1973-80, as described in Table 1 and Figure 1. Stagflation is defined as a situation where either of the following phenomena exist: (a) a rising unemployment rate, a declining growth rate of real output and a rising inflation rate, or (b) a "high" unemployment rate, low growth rate of real output and a "high" or rising inflation rate.

The rate of growth of output declined and the rate of inflation rose during the last two periods. The average unemployment rate and average annual compound rate of inflation were higher, and the growth of real output was lower, during 1973-80 than they were during the period 1961-68.

On an even shorter-run basis (see Figure 1 or the Appendix to Chapter Four): (i) the unemployment rate rose from 1969-71 and the inflation rate rose from 1967-70; (ii) the unemployment rate rose from 1973-75 and the inflation rate rose from 1972-74; (iii) the unemployment rate was high or rising from 1975-80 and the inflation rate rose from 1976-80.

The post Viet Nam stagflation fundamentally contradicts the Keynesian propositions above. Cyclical movements in prices and output, relative to their trends, are not positively correlated. In the presence of excess supply, which Keynesians measure by the unemployment rate, prices and wages were rising relative to their trends. It was no longer possible to base policy upon the assumption that prices and wages are "sticky" in the presence of unemployment, and that variations in demand will be reflected primarily in output and not be dissipated by price and wage changes. The


π(t)
U(t)
9
8
7
6
5
4
3
2
1
0
-1
-2
1955
1960
1965
1970
1975
1980

wage unit could not be regarded as a fixed point. No longer was there a consensus that the Keynesian model is an adequate guide to the formulation and execution of policies designed to eliminate a gap between potential and actual output.

In 1972, the Council of Economic Advisers plaintively wrote:

> "The problems of managing fiscal policy or monetary policy or both have apparently been underestimated. It may be that more has been promised than can be delivered with existing knowledge and instruments" (Council of Economic Advisers, 1972, p. 112).

The response to the cognitive dissonance between their theory and the post 1968 history was to focus upon price equation (1) and imbue it with an exogenous ad hoc life of its own. Price inflation was accounted for by the inflation of nominal unit labor costs. A comparison of Columns 1 and 2 in Table 1 indicates that inflation of prices is closely associated with inflation of unit labor costs. The Keynesian Council of Economic Advisers accounted for the post 1968 inflation in the following way.

The rate of price inflation π is the sum of the inflation of nominal unit labor cost ω plus nonsystematic factors η. The major factor determining the rate of price inflation is the rate of inflation of nominal unit labor costs, which was termed "the underlying rate of inflation." The dominant inflationary pressures originally came from a series of large external shocks (η) to the American economy: the depreciation of the dollar in 1971-73, a worldwide crop shortage and the rise in oil prices. Once under way, a high rate of inflation generates responses ω and adaptations by individuals and institutions that perpetuate the wage-price spiral, even in periods of economic slack. The behavior of the systematic part of the rate of inflation is related to the rate of inflation of unit labor costs, which is not very responsive to the state of the labor market (Economic Report of the President, 1979, ch. 2, pp. 55-57).

The Keynesian response, to the cognitive dissonance between their model and the past 1968 experience, is deficient in three respects.

First: Inflation of prices cannot be *explained* in an epistemological sense by the inflation of unit labor costs. The price level p per unit of output is *defined* as total costs, plus profit, per unit of output. Its composition in 1970 is described as follows (Economic Report of the President, 1980, Table B-12).

capital consumption allowances	9.4
indirect business taxes	11.0
compensation of employees = W =	67.3
net interest	3.0
corporate profits and inventory valuation adjustment	9.2
price per unit of output = p =	100 %

Nominal unit labor costs W are 67% of price p and, from 1955-79, they ranged from 64% to 67%. The value of k in equation (1) above is 1.5. The correlation between the inflation of prices π (Col. 1) and the inflation of unit labor costs ω (Col. 2) is simply a correlation between the whole (p) and 67% of itself (W). One could ask *either* why the rate of price inflation accelerated *or* why the rate of inflation of unit labor costs accelerated; but it is not edifying to claim that the major part causes the whole to accelerate. There is only one degree of freedom. A theory of inflation must explain either why π or ω accelerated from 1961-68 to 1968-73 to 1973-80.

Second: An explanation of inflation is formally equivalent to a prediction. To provide an explanation for the inflation rate from $t-1$ to t, denoted by $\pi(t)$, or the unemployment rate at time t, denoted by $U(t)$, the dependent variable must be the mathematical expectation taken at *earlier time $t-1$* of the variable at *later date t*. The variable to be explained is a conditional expectation, denoted by $E_{t-1}\,\pi(t)$ or $E_{t-1}\,U(t)$, where E is the expectations operator, and the subscript denotes when the expectation is taken. The use of some variables at time t, which are not known at $t-1$ (e.g., the inflation of unit labor costs or the rate of change of prices of food, fuel or imports) to account for other variables at time t (such as the inflation of the GNP deflator) is not an explanation. It is just a description of the phenomenon.

The following Keynesian account of the inflation of prices from 1972 to 1974 is not an explanation, but is simply an ex-post facto description. There is no hypothesis of the form: if X occurs at time t-1 then Y will occur at time t.

> "Between late 1972 and the spring of 1974 there was a rapid acceleration in the overall inflation rate, more than half of which appears to have been caused by an acceleration of food and energy prices, and the remainder by some combination of nominal demand growth and the loosening of controls. Farm prices almost doubled between early 1972 and the summer of 1973 as the result of the simultaneous occurrence of several adverse factors, including the delayed impact of the 1971 dollar devaluation, crop failures in many parts of the world combined with massive sales of United States wheat to the Soviet Union, and a peculiar disappearance of Peruvian anchovies from their normal feeding grounds" (Gordon, p. 142).

Third: the Keynesian attempt to account for the acceleration of inflation of prices by attributing it to the inflation of nominal unit labor costs contradicts Keynesian propositions [K1] - [K3] above. The Keynesian model, as described in the propositions quoted above, requires that when there is an Okun Gap the wage unit grow below its trend rate and that it be independent of the demand management policies undertaken. Then, a rise in nominal government expenditures G or in the nominal stock of money M implies rises in real values G_w and M_w respectively in equation (4) above. Only if real-government purchases G_w, or real balances M_w, rise does fiscal or monetary policy raise real output y. If the wage unit is volatile, and especially if it is highly sensitive to the monetary and fiscal policies undertaken, then there is no presumption that demand management policies will be efficacious in raising real output and reducing the Okun Gap.

II. The Polarity of Views: The New Classical Economics (NCE) Fundamentally Rejects Keynesian Economics

The New Classical Economics rejects Keynesian economics completely and fundamentally. In 1969 Okun wrote that the implementation of Keynesian demand management policy contributed to the obsolescence of the business cycle and successfully eliminated the gap between potential and actual output. A decade later, Lucas and Sargent wrote that the New Classical Economics theory

> "... predicts that there is no way that the monetary authority can follow a systematic activist policy and achieve a rate of output that is on average higher over the business cycle than would occur if it simply adopted a no feedback, x-percent rule of the kind Friedman and Simons recommended" (Lucas and Sargent, 1978, pp. 60-61).

The NCE does not claim that a Friedman style constant rate of growth of the money supply is preferable to a money growth rate which responds positively (or even negatively) to the unemployment rate. It claims that:

> "... the unemployment rate [is] insensitive to demand policy choices and thereby ... [suggests] that these choices should be made on the basis of implications of alternative policy parameters for the stochastic evolution of the price level (and, therefore, the inflation rate)" (McCallum, 1980, p. 724).

Many macroeconomic models imply that: the change in the unemployment rate (or ratio of actual to capacity output) depends upon lagged values of the unemployment rate (or ratio of actual to capacity output), real shocks and the forecast error between the current price level and the value which the market anticipated on the basis of information at an earlier date, when production and spending decisions were made. A necessary condition for the validity of the NCE is the Muth Rational Expectations Hypothesis (MRE) that the forecast error is a serially uncorrelated term with a zero expectation. It follows that the mathematical expectation of the change in the unemployment rate just depends upon lagged unemployment rates which reflect frictions in the economy resulting from costs of adjustment.

Formally, equations (8) and (9) are the core of the New Classical Economics. Equation (8) states that the unemployment rate at time t, denoted by $U(t)$, depends upon its lagged values $U(t-j)$ and "innovation" term $v(t)$. It is convenient to measure the unemployment rate as a deviation $u(t) \equiv U(t) - U_e$ from its "equilibrium" value U_e. Then the crucial NCE equation is:

(8) $$u(t) = \sum_{j=1} a_j u(t-j) + v(t).$$

Equation (9) states that the "innovation" $v(t)$ is statistically independent of all past values of monetary and fiscal policies undertaken, and has no structure. Let $x(t-1)$ denote a vector of monetary and fiscal policies undertaken or in force at time $t-1$. According to the NCE:

(9) $$E_{t-1}[v(t)|x(t-1)] = 0; \quad E[v(t), v(t-1)] = 0.$$

The mathematical expectation of the "innovation" of the unemployment rate is completely independent of the monetary and fiscal policies undertaken at $t-1$ or earlier. Combine the mathematical expectation of (8) with (9) and derive the Policy Ineffectiveness Proposition (10), which is the fulcrum of the NCE.

(10) $$E_{t-1} u(t) = \sum_{j=1} a_j u(t-j).$$

It can be stated as proposition [NCE1].

[NCE1] On average, the unemployment rate deviation $u(t)$, or Okun Gap, is totally insensitive to demand management policies. The only systematic factor determining the evolution of the unemployment rate is its own history.

In 1961, the unemployment rate $U(t)$ was 6.7%. According to the NCE, its evolution from 1961-69 was statistically independent of the expansionary fiscal policy and accommodative monetary policy described by Okun. The same trajectory of the unemployment rate is expected to occur whether or not there is an activist policy. In no way was the "... activist strategy ... the key that unlocked the door to sustained expansion in the 1960's." Equation (10) of the NCE is the fundamental rejection of Keynesian economics.

Major policy issues during the period 1973-81 concern: (1) the strategies which are efficacious in reducing the rate of inflation and the (2) social costs, in terms of lost output and higher unemployment rates, associated with each strategy.

An implication of equation (10) is NCE proposition [NCE2].

[NCE2] There are no expected social costs to any feedback monetary or fiscal policy $x(t-1)$ to reduce the rate of inflation $\pi(t)$.

The expected unemployment rate $E_{t-1} u(t)$, or Okun Gap, just depends upon its own history, and is independent of any monetary or fiscal policies undertaken at time $t-1$. Therefore, an anticipated monetary or fiscal policy $x(t-1)$ affects the price level $p(t)$ quickly and systematically because, in the Quantity theory equation, $x(t-1)$ has no systematic effects upon either the level of output or velocity at time t.

This view directly contradicts the Keynesian propositions [K1] - [K5] above. The Keynesian view, described by equations (1), (4) and (5) above, is that a decline in the nominal money stock M is associated with a decline in the real money stock M_w in wage units. Aggregate demand declines and real output is reduced. When Okun Gaps have been produced, such that output is below capacity output, then the rate of inflation of nominal unit labor costs will be reduced. A high price must be paid if traditional monetary and fiscal policies are to be used to reduce the rate of inflation.

Tobin expressed the Keynesian view lucidly and cogently.

> "Must we either hold the real performance of the economy hostage to disinflation or accommodate monetary demand to the inflation that history happens to have bequeathed us? Our quandary today is a vivid example of the general dilemma ... Hew to a non-inflationary line of monetary demand and rely on market forces to produce a compatible and stabilization path of wages and prices? Or, as Keynes was advocating in the 1920's and 1930's, adopt the course of monetary demand to the wage-price trend. The first, experience suggests, often gives poor performance in the real payoffs of economic activity. The second leaves prices unanchored, their path the cumulative history of random shocks."
>
> "The way out, the only way out, is incomes policy.... Use corporate, personal income, and payroll taxes to reward and insure compliant employers and workers, and possibly--as Wallich and Weintraub independently proposed--to penalize violators" (1977, p. 467).

Disagreement between the Keynesian and the New Classical Economics is fundamental and complete. The profession is polarized between these two points of view. There is no longer a macroeconomic consensus theory to guide the Federal Reserve Board or Council of Economic Advisers in the formulation of Economic policy.

III. Monetarism Between the Poles

What I define as the Monetarist position was considered heretical during the period of the 1960's. Twenty years later, it is intermediate between the poles of Keynesianism and the New Classical Economics.

Monetarism consists of a set of empirical propositions concerning the effects of a given rate of monetary expansion, and of variations in this rate, upon the rate of inflation and variance of the unemployment rate. Whereas Keynesians generally attribute the variance of the unemployment rate (or ratio of actual to capacity output) to systematic exogenous movements in the marginal efficiency of capital, Monetarists place more emphasis upon variations in the rate of monetary expansion generated by the monetary authorities as an explanation of unemployment rate variations.

The basic Monetarist proposition is that inflation is primarily a monetary phenomenon.

> [M1] Past rates of growth of the money stock are the only systematic factors determining the rate of inflation. Contrary to the Keynesian view, Monetarists claim that a restrictive fiscal policy without a reduction in the rate of monetary expansion cannot reduce the rate of inflation.

To have a significant impact upon the rate of inflation, a change in tax rates or government expenditures must be associated with a change in the rate of monetary expansion. Milton Friedman explained this proposition as follows.

> "Whether deficits produce inflation depends on how they are financed.... If, as so often happens, they are financed by creating money, they unquestionably do produce inflationary pressure.... If they are financed by borrowing from the public, at whatever interest rates are necessary, they may still exert some minor inflationary pressure.... However, their

> major effect will be to make interest rates higher than they would otherwise be" (1974, p. 140).

The reason why a money financed fiscal policy is so powerful, according to Friedman, is that as long as the deficit continues and is financed by creating money, the LM curve keeps shifting to the right. The continuous shifting of the LM curve eventually dominates the once and for all shift of the IS curve produced by a rise in government expenditures or decline in tax rates (1974, p. 141).

Monetarist proposition [M1] is summarized algebraically by equation (11). The rate of price inflation from year $t-1$ to year t is denoted by $\pi(t)$, and the rate of monetary expansion from year $t-1$ to year t is denoted by $\mu(t)$.

$$\pi(t) = a_0 + \sum_{i=1} a_i \mu(t-i) + \varepsilon(t); \quad \sum_{i=1} a_i = 1, \tag{11}$$

where $\varepsilon(t)$ is a random term with a zero expectation. The value of the constant $a_0 \leqq 0$ depends upon which definition of the money supply is used. Figure 2 describes the historical relationship between the rate of inflation and the rate of monetary expansion in the United States from 1957 through 1979.

All three schools of thought agree that there is no relation between unemployment and inflation in the steady state. Contrary to the NCE, Monetarists believe proposition [M2].

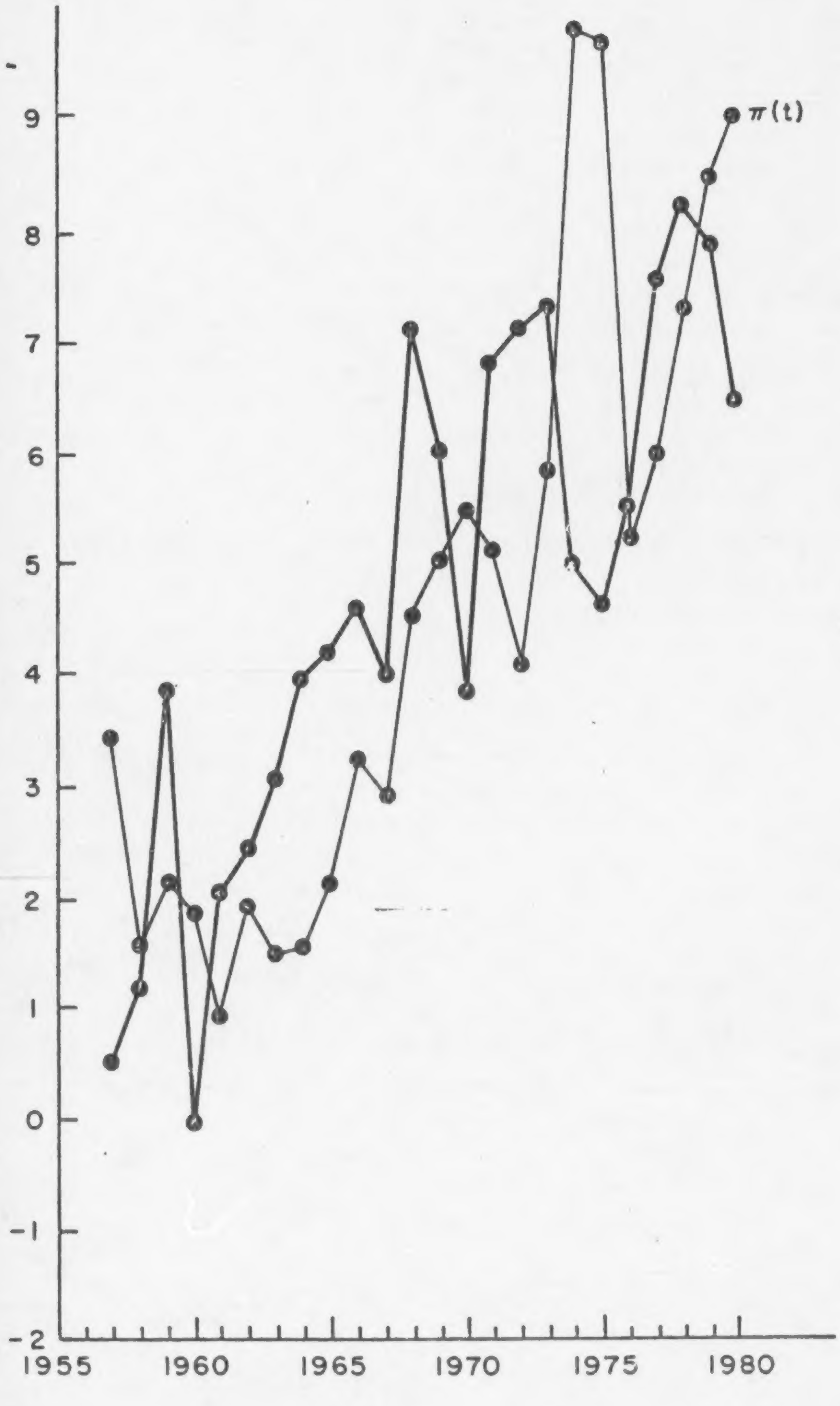
> [M2] There is a tradeoff between the deceleration of an inflation and a temporary rise in the unemployment rate.

Proposition [M3] differs from both poles.

> [M3] A rise in the rate of monetary expansion temporarily reduces the unemployment rate and permanently raises the inflation rate.

For example, Karl Brunner (who coined the term "Monetarism") writes (1970, p. 13):

> "Monetary growth affects dominantly the price level. Monetary accelerations or decelerations, on the other hand, operate essentially on output and


π(t)
9
8
7
6
5
4
3
2
1
0
-1
-2
1955
1960
1965
1970
1975
1980

> employment. It is, therefore, not possible to state whether a 10% annual rate of increase in the money stock is expansionary or not with respect to output. Additional information is required. We must know what happened to monetary growth previously."
> "The impact of monetary accelerations (or decelerations) on output and employment is essentially temporary."

These three propositions can be summarized algebraically. Let $U(t)$ be the unemployment rate, $G(y(t))$ be the growth rate of real output, $\pi(t)$ be the rate of inflation and $\mu(t)$ be the rate of monetary expansion. Propositions [M2] and [M3] are summarized by equations (12) - (14).

There is no relation between a constant rate of monetary growth μ and either the unemployment rate $U(t)$ or the rate of growth of real output $G(y(t))$.

$$\text{(12)} \qquad \text{Cov } [U(t), \mu] = \text{Cov } [G(y(t), \mu] = 0.$$

Monetary accelerations or decelerations $\Delta\mu(t)$ exert effects upon the unemployment rate and rate of growth of output.[1]

$$\text{(13)} \qquad \text{Cov } [\Delta U(t), \Delta\mu(t)] < 0$$

$$\text{(14)} \qquad \text{Cov } [G(y(t)), \Delta\mu(t)] > 0.$$

A change in the rate of monetary expansion first produces changes in the real variables, and later produces changes in the rate of inflation. Milton Friedman's description of this process differs fundamentally from the process implied by the NCE, whereby anticipated monetary policy affects nominal, but not real, variables. Friedman writes:

> "If the rate of monetary growth is reduced then about six to nine months later, the rate of growth of nominal income and also of physical output will decline. However, the rate of price rise will be affected very little. There will be downward pressure on prices only as a gap emerges between actual and potential output."

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[1] See Friedman and Schwartz (1963), Table 25, p. 594.

> "On average, the effect on prices comes about six to nine months after the effect on income and output, so that the total delay between a change in money growth and a change in the rate of inflation averages something like 12-18 months" (1970, p. 23).

Stagflation is not inconsistent with these Monetarist propositions. Brunner perceived that:

> "... the coexistence of permanent price inflation and fluctuations in real variables ... results from the interaction between the effects associated with high average monetary growth and large monetary accelerations or decelerations" (1970, p. 13).

Equation (11) states that the inflation rate is a linear combination of past rates of monetary expansion. A high inflation rate results from high rates of monetary expansion in the past few years. Equations (13) and (14) state that monetary decelerations $\Delta\mu(t) < 0$ are associated with rises in the unemployment rate. Monetarist propositions [M4] and [M5] can be stated.

> [M4] A deceleration of the rate of monetary expansion, following several years of high rates of monetary expansion, exerts its effects directly upon the unemployment rate. However, the rate of inflation is kept high by the inertia of past rates of monetary expansion.
>
> [M5] Contrary to the NCE, there is a significant cost in terms of unemployment and lost output to reducing the rate of inflation.

Monetarist propositions [M1] - [M5] are intermediate between the polarized Keynesian and NCE positions.

IV. Issues to be Resolved in this Book

Keynesians, Monetarists and New Classical Economists agree that the steady-state of inflation is closely related to the growth of the money supply, and that monetary policy cannot affect the equilibrium rate of unemployment or rate of growth of output. Disagreement concerns: (i) the macrodynamics of unemployment, inflation and rate of growth of output between steady states, and (ii) the effects of fiscal policy upon the characteristics of the steady state. The following issues are controversial.

What are the short-run adjustments of the inflation rate and unemployment rate (or growth of output) to changes in monetary and fiscal policy? How is the current inflation rate related to the unemployment rate? What unemployment rates are consistent with decelerating an inflation? What are the social costs of reducing the rate of inflation? Are gradualist policies preferable to "bang-bang" policies? What are the characteristics of the continuous transition between the short-run situation and the long-run equilibrium, where the stocks of capital and financial assets are endogenous variables? To what extent are the IS-LM impact effects of fiscal and monetary policy, on the level of output, the real rate of interest and the price level, amplified or reversed by endogenous changes in the stocks of capital and financial assets?

My strategy is to develop a general macrodynamic model which can imply any one of the three schools of thought, depending upon the parameter specification. My model[1] is broader than those used by the three schools of thought, since prices, quantities, the stocks of capital and of financial assets are endogenous. It is asked: to what extent do the schools of thought postulate different transmission mechanisms? Are their differences qualitative (e.g., is one based upon rational behavior and another based upon ad hoc equations?), or do they simply postulate different numerical values of coefficient in the same equation? I show that each school of thought is a special case of a general model, and that the disagreement among the Keynesians, New Classical Economics and Monetarist viewpoints can be resolved by testing alternative statistical hypotheses concerning parameter specifications.

Chapter Two specifies the behavioral equations of the general dynamic model of a growing economy with a variable unemployment rate, inflation rate, stock of capital and stocks of financial assets. This formalistic chapter provides the structure for the subsequent economic analysis.

In Chapter Three, it is shown that the three schools of thought are special cases of the general model. By specifying the values of particular parameters, the propositions of each school of thought are derived.

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[1] The model is a development and synthesis of Infante and Stein (1980), Stein (1974), and Stein (1971).

Hypothesis testing is the main subject of Chapter Four, which discusses four issues. First, the statistical hypotheses concerning the unemployment rate or ratio of actual to capacity output are tested. The NCE hypotheses are rejected and the Monetarist hypotheses are accepted. Second, the Keynesian and Monetarist statistical hypotheses concerning the rate of inflation are tested against each other. The Keynesian hypotheses are rejected and the Monetarist hypotheses are accepted. Third, the predictive performance of the Monetarist equations are examined for the U.S., the world as a whole and for a set of twelve major countries. Fourth, there is a quantitative analysis of demand management policies. It is shown that stagflation is produced by a demand management policy which strives to solve the immediate problem of either unemployment or inflation. A comparison is made of the effects of gradualist and "bang-bang" policies to reduce inflation.

Chapter Five is concerned with the continuous dynamic growth path of the economy to the long-run steady state. Major attention is devoted to the study of the short- and long-run effects of money financed fiscal policy. It is shown that government budget balance is not a condition for equilibrium. A rise in government purchases per capita exerts a positive impact upon output per capita. Steady-state output per capita and the capital intensity, however, decline. There is a rise in both the inflation tax on real balances and in the steady-state rate of inflation. Indeed, there is a long-run social cost involved in using fiscal policy to accelerate the return to full employment.

Chapter Six concludes the contribution of this book to the state of macroeconomics.

> "My liege, here is the strangest controversy,
> Come from the country to be judged by you
> That e'er I heard. Shall I produce the men?"

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